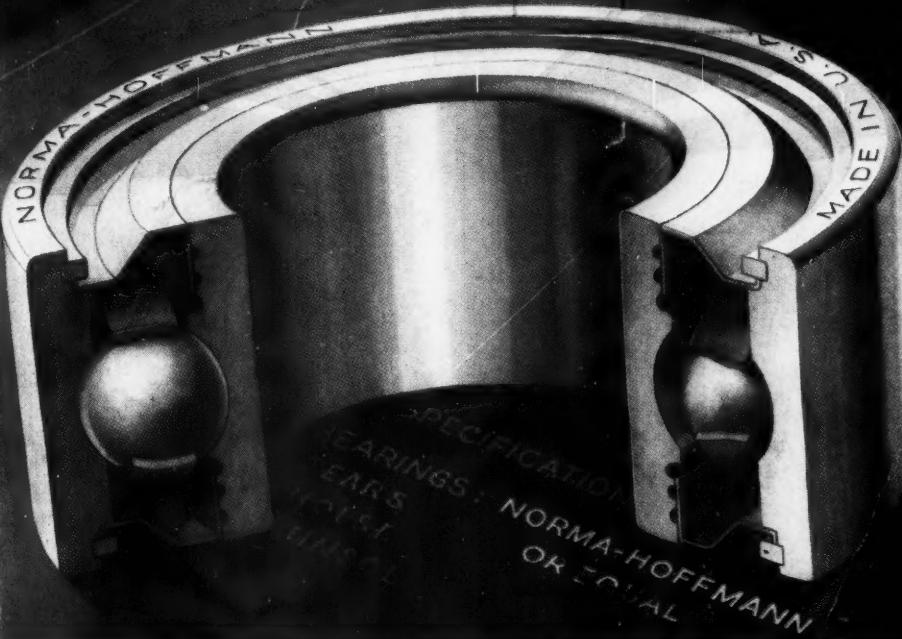


MODERN  
Machine Shop

EDMIS

OCTOBER  
1948



... There is No Equal!

Leading manufacturers endorse the patented Norma-Hoffmann "Cartridge" Bearing because it is unequalled for continuous performance and long operating life.

NORMA-HOFFMANN BEARINGS CORP.  
STAMFORD, CONNECTICUT • FOUNDED 1911

R v. 21<sup>2</sup> Oct. 1948 - Jan. 1949

Get Complete Details Now  
on the New  
**GORTON**  
ALL-PURPOSE MACHINE

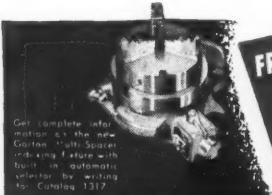
ANNOUNCING THE NEW  
0-16A SUPER-SPEED  
MILLING MACHINE

Indispensable in the Tool Room  
Machine Shop . . . Adaptable for General  
Engraving, Brass Routing, Die and  
Mold Duplicating

This new 0-16A \*Gorton Super-Speed mill incorporates all of the features necessary in an "all purpose" machine. It will do a better job for you on any work within the limits of its size.

The Gorton 0-16A is *rugged*. It is designed for operator convenience and features extremely sensitive table and saddle controls. Spindle speeds from 300 to 10,000 R.P.M. available,  $\frac{1}{2}$  H.P. motor.

\*Trade Mark Reg. U. S. Pat. Office



Get complete information on the new Gorton High Speed Milling Machine built in automatic selector by writing for Catalog 1317.



PLEASE SEND WITHOUT OBLIGATION  
Bulletin No. 1655-1710.

Name. . . . .  
Company. . . . .  
Position. . . . .  
Address. . . . .  
City. . . . . State. . . . .



GEORGE **GORTON** MACHINE CO.  
Tracer Controlled Milling  
1710 RACINE STREET • RACINE, WISCONSIN, U. S. A.

1/20/48

VOLUME 21 NUMBER 5  
OCTOBER, 1948

HOWARD CAMPBELL  
Editor

FRED W. VOGEL  
Managing Editor

ROBERT I. SHORE  
New Equipment Editor

GENE J. SCHWARBER  
Advertising Manager

NORMAN S. ROGERS  
Art Director

WILLIAM HARIG, JR.  
Circulation Manager

**ADVERTISING REPRESENTATIVES**

RICHARD S. KLINE  
GEORGE E. HAY

431 Main St., Cincinnati 2  
MAin 0182

G. M. FILLMORE  
342 Madison Ave., New York 17  
Murray Hill 6-3899

CHARLES H. DEILY, JR.  
351 Mattison Avenue  
Ambler, Pennsylvania  
Ambler 0339

JOHN M. KRINGS  
Tribune Tower, Chicago 11  
DElaware 7-5441

THE ROBERT W. WALKER CO.  
684 S. LaFayette Park Place  
Los Angeles 5  
DRexel 4388  
68 Post Street, San Francisco 4  
SUtter 1-5568

**MEMBER**



Published monthly and  
copyrighted (1948) by  
**GARDNER PUBLICATIONS, INC.**  
431 Main St., Cincinnati 2, Ohio

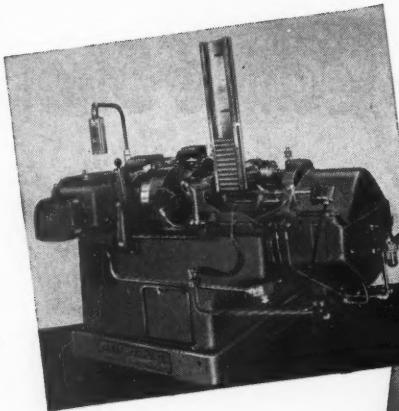
Howard Campbell ..... President  
John M. Krings ..... Vice President  
Granville M. Fillmore ..... Vice President  
Margaret L. Gardner ..... Secretary  
Richard S. Kline ..... Treasurer

Printed in U. S. A.

# MODERN Machine Shop

## Contents

The American Way .....	100
By Howard Campbell	
The Miracle of America .....	106
Who's A Capitalist? .....	116
By James C. Stuart	
Creative Effort Bears Fruit in a Free Economy .....	120
Freedom of Creative Effort Fosters Engineering Progress	
—Surface Hardening 3000 Ring Gears Per Day .....	166
—Diesel Locomotive Wheel Production Tripled .....	168
—Special Tool Increases Valve Production	
100 Per Cent .....	174
—Cutting Operations Combined to Increase	
Crankshaft Production .....	176
Profile Milling Applied to Roll Pod Machining .....	178
Special Milling Machine Increases Truck Crankshaft	
Production .....	186
—One Machine—One Operator—One Hour	
74 Internal Helical Gears .....	190
—Diverse Production Problems Solved with Multi-	
Spindle Automatics .....	198
—Aluminum Pistons Machined at Rate of 127 per	
Hour .....	212
—Seventy-Five Per Cent More Production on	
Automatic Lathe .....	216
—Crankshafts Machined in One-Fourth of Previous	
Time .....	218
—Gear Case Production Increased 170 Per Cent .....	224
—Milling 500 Slots per Hour .....	226
—Seven Operations Performed Simultaneously .....	230
—Machining Copper Cores to Tolerances Measured	
in Micro-Inches .....	232
—Microholing 300 Connecting Rods per Hour .....	234
Guest Editorial .....	236
News of the Industry .....	238
New Shop Equipment .....	256
Services Directory .....	374
"Where to Get It" .....	376
Cartoon .....	380
Over the Editor's Desk .....	382
Index to Advertisements .....	385



# Fewer Work Stoppages

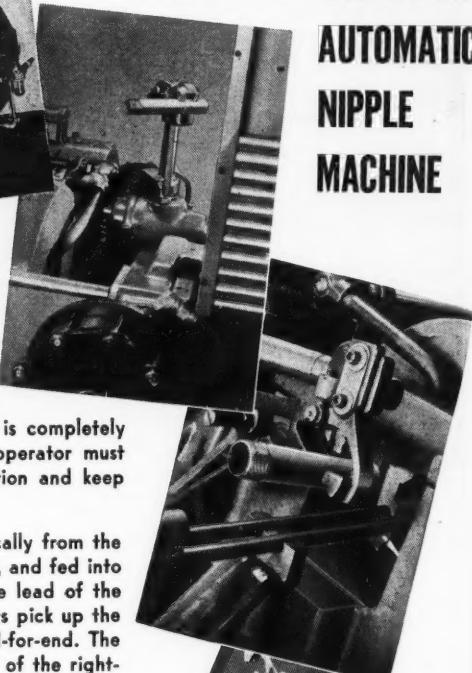
WITH THE **LANDIS**  
**AUTOMATIC**  
**NIPPLE**  
**MACHINE**

- New Transfer Mechanism Allows Longer Running Time

The operation cycle, in which both ends of nipples are threaded, reamed, and chamfered, is completely automatic. During operation, the operator must only give the machine visual attention and keep the magazine filled.

Blanks are released automatically from the magazine into the left-hand carriage, and fed into the die head at a rate equal to the lead of the thread being cut. Mechanical fingers pick up the semi-finished nipple and turn it end-for-end. The blank is placed on the work-rest bar of the right-hand carriage, and pushed into position for the operations on the unfinished end. Finished nipples are ejected automatically. Simultaneous with the operations on the right-hand carriage, a second blank is beginning the operation cycle on the left-hand carriage.

Write for Insert to Bulletin D-84.



# PRODUCTION INCREASED 170%



**5 HOLES BORED**  
with exact spacing  
in a single setup.

and costs cut 63¢ on the dollar

...with a

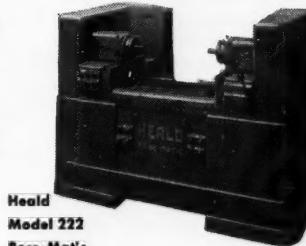
## NEW Heald Bore-Matic

That's the actual production record of a leading washing machine manufacturer. When a new Heald Model 222 Bore-Matic took over the job of finishing gear cases, production went up 170 per cent—and costs came down 63 per cent!

Five holes are precision bored, faced and chamfered in a single setting, obtaining close accuracy for spacing and eliminating several operations and setups previously required.

Easy, convenient operation, combined with a fast hydraulic fixture and rapid cycle, enable an operator to run this Bore-Matic and also a drill used for a previous operation.

Perhaps you don't have a job exactly like this one—but you do have the same opportunity to reduce costs, increase production and improve quality with the new Heald Bore-Matics. For further information on these outstanding new machines, we invite you to contact your nearest Heald representative or Worcester direct.



Heald  
Model 222  
Bore-Matic

### NEW BORE-MATIC FEATURES CAN HELP DO A BETTER JOB ON YOUR WORK, TOO

Faster table traverse, higher speeds, constant feeds, low temperature hydraulic system, cool running heads, perfected way lubrication, leak proof piping, and other new features can help you do a better job, faster, and at less cost. They're worth investigating.



**THE HEALD MACHINE COMPANY, Worcester 6, Mass.**

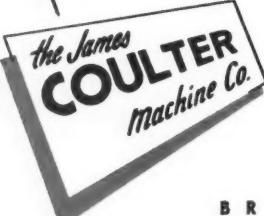
Branch Offices in Chicago • Cleveland • Dayton • Detroit • Indianapolis • Lansing • New York

**PRESENTING**  
**THE NEW**  
**COULTER**



\* Here at last! The Conventional type Thread Milling Machine that produces long and short precision traversing, elevating, cross-feed and lead screws in LESS TIME!

Get the whole story today . . . then CHECK and COMPARE. It's COULTER all the way!



MORE DEPENDABILITY  
Anti-Friction Bearings and Spiral and Worm Gears in Cutter Spindle Drive.

MORE EFFICIENCY  
Full-size spindle and balance wheel on both ends of cutter spindle drive.

MORE CAPACITY  
59 speed changes possible with standard equipment. Cut threads from 1/3 to 20 per inch and diametral leads from 7 to 20 in single, double and triple worms, and leads from .050 to 3,000.

MORE ACCESSIBILITY  
All speed and feed changes within easy reach of operator for quick change over.

MORE PRODUCTION  
Mill hard and soft materials with carbide tools.

These are reasons enough why you need the Coulter THREADMASTER . . . the Thread Milling Machine of tomorrow . . . threading it better and faster, today!

B R I D G E P O R T , C O N N E C T I C U T

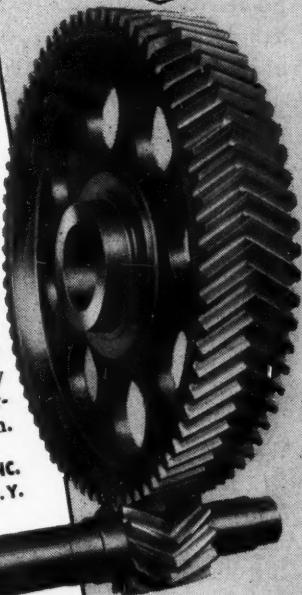
# The hardest-working gears you can buy:

The *backbone* in Farrel continuous tooth herringbone gears, formed by the meeting of the two helices without a useless center groove, puts the *entire* face width of the gear to work for you.

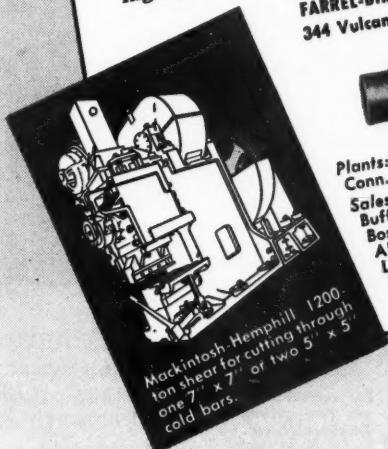
This provides extra strength and greater capacity for wear and shock resistance — especially important in heavy duty machine applications like these. The opposed helices balance and absorb axial thrust within the gear member, preventing harmful thrust loads with resultant stresses on other parts of the machinery.

The *Gear with a Backbone* is made in any size up to 20 feet in diameter, for practically any application. Information and engineering assistance available, without obligation.

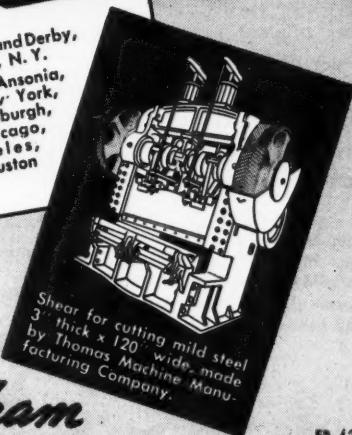
THE GEAR  
WITH A  
BACKBONE



FARREL-BIRMINGHAM CO., INC.  
344 Vulcan St., Buffalo 7, N.Y.



Plants: Ansonia and Derby,  
Conn., Buffalo, N.Y.  
Sales Offices: Ansonia,  
Buffalo, New York,  
Boston, Pittsburgh,  
Akron, Chicago,  
Los Angeles,  
Tulsa, Houston



**Farrel-Birmingham**

FB-431

*Who says:*  
**"A TAP IS A TAP?"**



We can't go along with that statement. It's like saying, "A book is a book" . . . (or, closer to home) "A machinist is a machinist."

If you believe that all engineers, machinists, machines, steels, coolants, inspectors, etc. are alike . . . then you might say, "A tap is a tap." But at Hanson-Whitney we know better. So do the thousands of buyers of H-W Taps . . . many of whom have been repeating customers since we

pioneered the "finished" tap . . . threads ground after hardening.

H-W Taps are the result of the closest control over materials, men, and machines . . . control that has been evolved through many years of leadership in supplying the right tap for the specific job.

So . . . let's not say, "A tap is a tap" . . . let's say an H-W Tap is a tap of the highest quality, measured, of course, by the number of holes tapped per grind.

**HANSON-WHITNEY MACHINE CO. HARTFORD 2, CONN.**  
Division of Whitney-Hanson Industries, Inc.

**Hanson**  
**Whitney**

For practical recommendations submit your problems to Hanson-Whitney engineers.

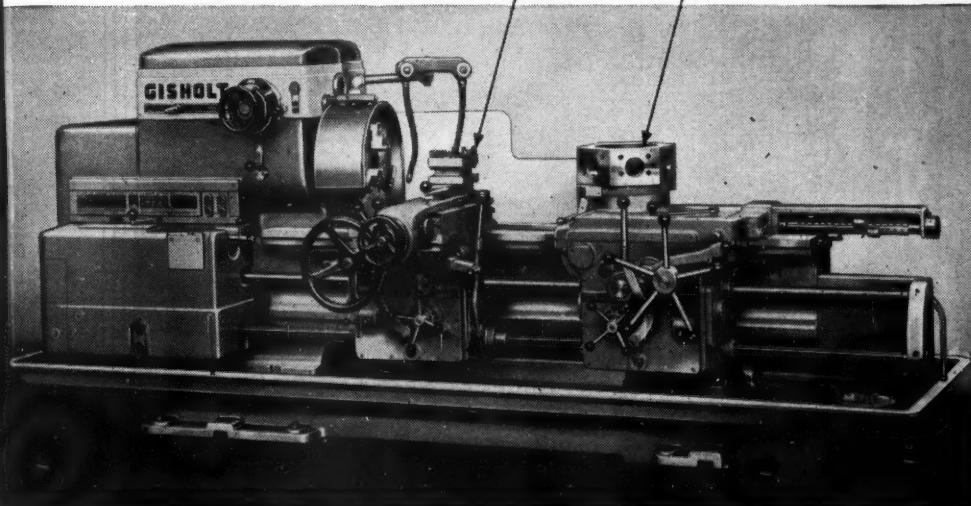
PIONEERS OF FINISHED TAPS

SAHW48

# RIGID TURRETS!

## —for Rigid Standards of Accuracy!

It's one of the reasons why seasoned production men insist on Gisholt. The square turret tool post and hexagon turret are positioned by double-beveled clamping rings which provide exceptional clamping pressure with easy hand motion. Moreover, on each indexing operation, turret faces are rigidly locked in true position by hardened and precision-ground locking pins to insure unfailing accuracy.



**GISHOLT ACCURACY** is further enhanced by a heavy unit-cast head stock and bed which insures real rigidity. Bedways of hardened steel (64-66 Rockwell C) are ground in perfect alignment with the spindle. And they are virtually wear-proof. If you want accuracy, insist on Gisholt.

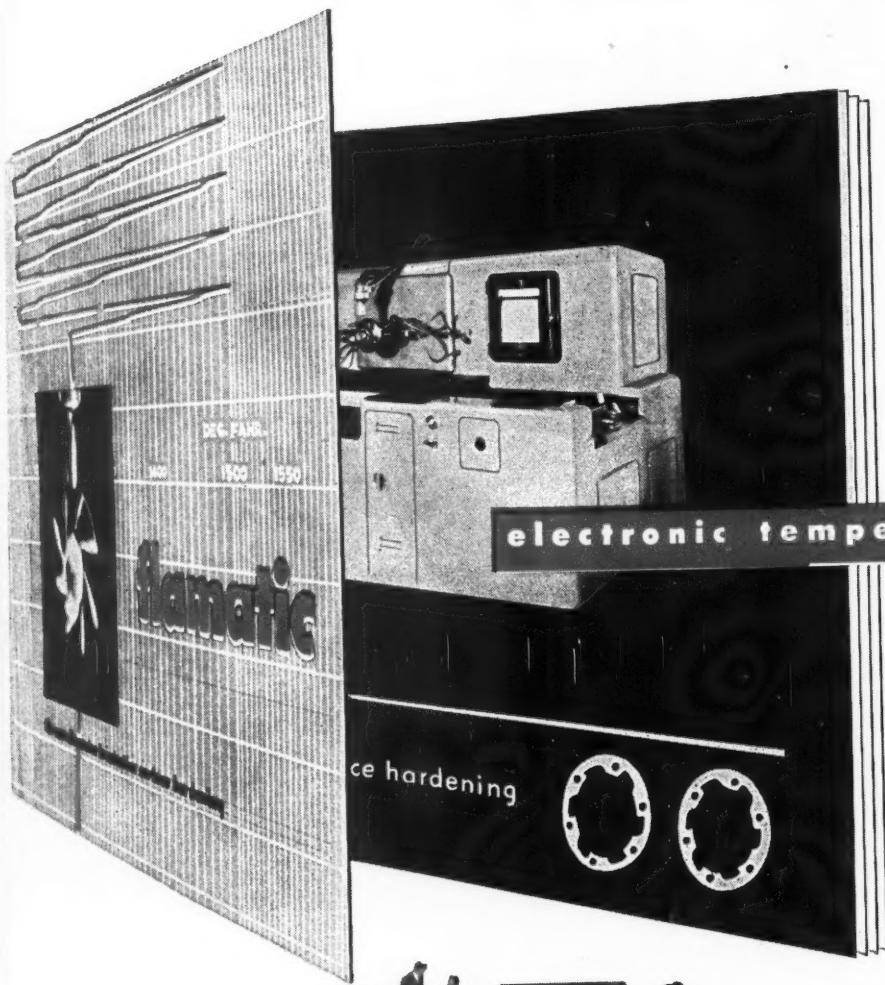
**GISHOLT MACHINE COMPANY**  
Madison 10, Wisconsin

**THE GISHOLT ROUND TABLE** represents the collective experience of specialists in machining, surface-finishing and balancing of round and partly round parts. Your problems are welcomed here.





thousands will learn the meaning of



NATIONAL METAL



SHOW • BOOTH 1510

the new dimension in  
selective service hardening

# flamatic exhibit

Whether you make, buy, process, or use heat treated parts, join the thousands who will see the Cincinnati

Flamatic Exhibit at the Metal Show - featuring two difficult surface hardening jobs in actual production:

- cams for automatic torque converter transmissions
- take-off drive shafts for gear reduction units.

You will see how electronic temperature control - the new dimension in selective surface hardening - has led to higher physicals, better uniformity, faster production,

and lower costs than ever before obtainable. Talk with

Flamatic engineers, get specific data that will help you apply Flamatic to your requirements . . . Don't miss the Show! Don't miss Flamatic!

\* Write for special Show Booklet, "The New Dimension in Selective Surface Hardening."



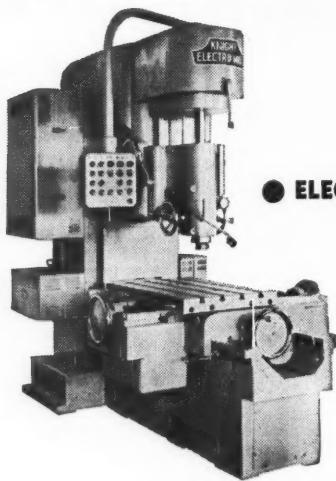
THE CINCINNATI MILLING MACHINE CO.

Cincinnati 9, Ohio, U.S.A.

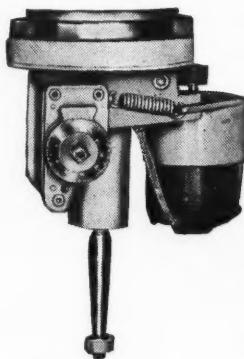
# NEW!!

## KNIGHT EQUIPMENT

. . . to Boost Output  
and Lower Costs



● ELECTROMILL



● HOLE GRINDING  
ATTACHMENT

Efficiently, economically handles large capacity work of many types: jigs, metal patterns, multi-cavity molds, jig boring with dial indicator, drilling, milling, machining light metals, etc. Infinitely variable range of speeds and feeds. Any combination of speeds and feed controls can be supplied or eliminated subject to customers requirements.

Accurately and quickly finishes holes and bores up to 6" diameter in hardened parts. Simplifies handling work too large to swing in standard machines. Special adaptors permit easy installation on any milling machine.

*Write Today*

for details and  
specifications



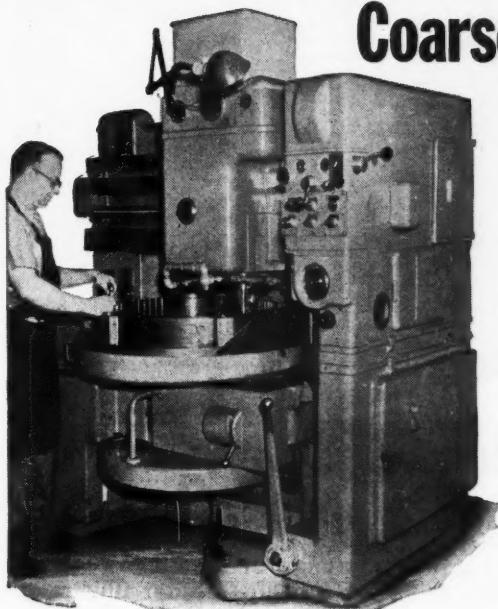
MORE GOODS for MORE PEOPLE at LOWER COST

3920 WEST PINE BLVD. • ST. LOUIS 8, MISSOURI

# W.B.KNIGHT

MACHINERY COMPANY

# RECORD TIME RATES on Big, Coarse-pitch Gears



Fellows 36-inch Gear Shaper  
installed at Pawling & Harnischfeger

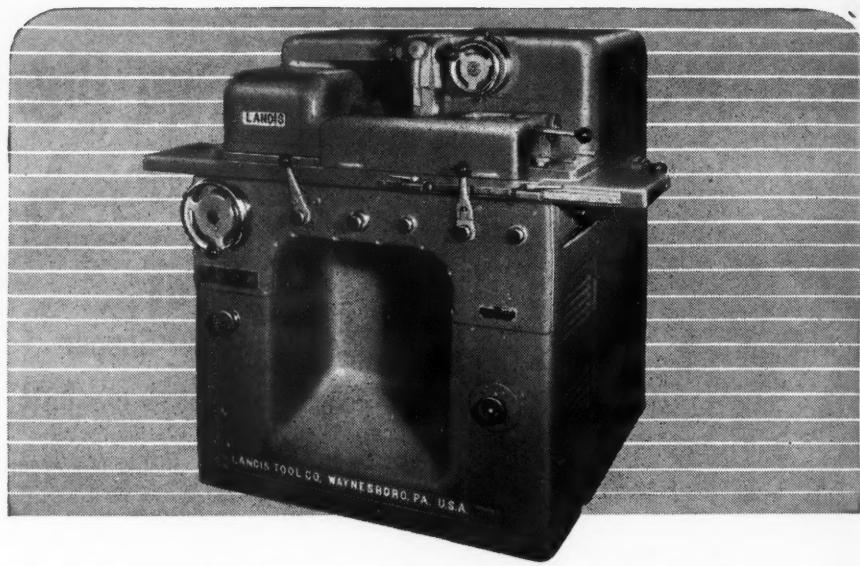
## New FELLOWS 36 inch Gear Shaper an All-purpose machine

Time saving is mighty important in either production or jobbing shop gear cutting. The 36-inch Fellows machine is so ruggedly built that it is capable of taking extremely heavy cuts, and at the same time produces a smooth finish with a high degree of accuracy.

This all-purpose machine is adapted to the cutting of external spur and helical gears up to 36 inches pitch diameter, as well as a large variety of non-gear work. Contact our nearest office for full information on this newest of heavy-duty Fellows Gear Shapers.

# Fellows

The Fellows Gear Shaper Co., Head Office and Export Dept., Springfield, Vermont. Branch Offices: 616 Fisher Building, Detroit 2; 640 West Town Office Building, Chicago 12; 7706 Empire State Building, New York 2



## For Lowest Precision Grinding Costs get the best.. **LANDIS TOOL**

The plus features of Landis Tool grinders pay big dividends in reduced precision grinding costs. For the 4" Type H Plain Grinder illustrated above, these include convenient operator controls, hydraulic table traverse, adjustable speed motor driven headstock, hydraulic automatic wheel feed.

For either tool room or production work, Landis Tool precision grinders give you a big increase in performance for very little cost.

### 4" Type H Plain Grinder

Lengths between centers available	12" and 18"
Maximum work swing	4 31/32"
Traverse speed	3"-120" per minute
Grinding wheel—standard	16"
Work speeds—r.p.m.	200 to 900
Maximum weight carried on centers	25 lbs.

Help for your grinder operators—Send for free illustrated book "Better Grinding."  
World's Largest Manufacturer of Precision Grinders Exclusively.

**LANDIS TOOL**  
*Precision  
Grinders*

LANDIS TOOL COMPANY 16 EAST 6TH ST., WAYNESBORO, PENNA.



**120 Pieces  
Per Minute**  
...from  
**3½" x .018" Brass**

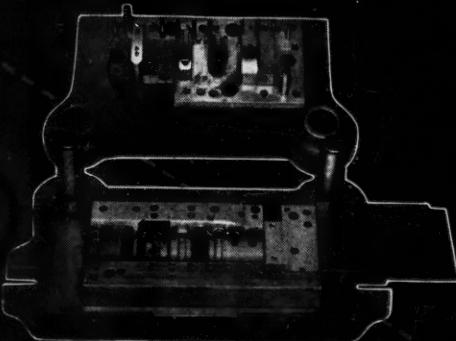


Photo courtesy of Federal Tool Corporation, Chicago

## ...using DANLY Precision Die Set

*Save Time...*

### Use DANLY Nation-Wide Die Set Assembly Service

Assembly plants (marked with stars) stock interchangeable parts for quick assembly and delivery of any standard die set to your specifications.

- \* Chicago 50, 2100 S. 52nd Ave.
- \* Cleveland 14, 1550 E. 33rd St.
- \* Dayton 2, 990 E. Monument Ave.
- \* Detroit 16, 1549 Temple Ave.
- \* Grand Rapids, 113 Michigan Ave., N.W.
- \* Long Island City 1, 47-28 37th St.
- \* Los Angeles 54, Ducommun Metals & Supply Co., 4890 S. Alameda
- \* Milwaukee 2, 111 E. Wisconsin Ave.
- \* Philadelphia 44, 18 W. Chelten Ave.
- \* Rochester 4, 16 Commercial St.

### Precision Guiding Required on Deep Blanking Tool

Here is another example of how Danly Precision Die Sets help maintain accurate punch and die relationship on high production work. The part illustrated, a slide cover, is produced at a rate of 120 pieces per minute on the 11-station progressive die and a Danly Standard Precision Semi-Steel Die Set.

An unusual deep blanking tool used in the last station requires precision guiding by the Danly Die Set to prevent breakdowns and assure peak performance. The blanking punch at this station enters the die a distance of  $5/16"$ .

### Sequence of Operations

Brass coil stock,  $3\frac{1}{2}$ " wide x  $.018"$  thick, is automatically fed through the following operations: Pierce pilot hole, slit, first form, idle, draw shape, pilot, restrike shape, pierce, idle, blank, pilot in scrap.

To date, over 3,000,000 pieces have been produced with the same Danly Die Set. An average of 200,000 pieces per grind is obtained.

**Helpful Engineering Service** — For helpful engineering service-on die sets of any size, standard or special, for any type of press operation, consult Danly without obligation.

*get this free bulletin*

Illustrates how Danly special machining and welding facilities help you save time and money on special die set applications.



**DANLY**

**DANLY MACHINE SPECIALTIES, INC.**  
2100 SOUTH 52ND AVENUE, CHICAGO 58, ILLINOIS



25 YEARS OF DEPENDABLE SERVICE  
TO THE STAMPING INDUSTRY

# ANNOUNCING

FIRST TIME IN U.S.A.

## WOLF PORTABLE ELECTRIC TOOLS

NOTED FOR FINE ENGLISH CRAFTSMANSHIP



- POWERFUL
- LIGHTWEIGHT
- AIR-COOLED
- UNIVERSAL 110-120 Volts
- 3-WIRE RUBBER CORD  
INCLUDING GROUND LEAD



HALF A CENTURY IN  
50 WORLD MARKETS  
WINNING RECOGNITION  
FOR HIGH QUALITY

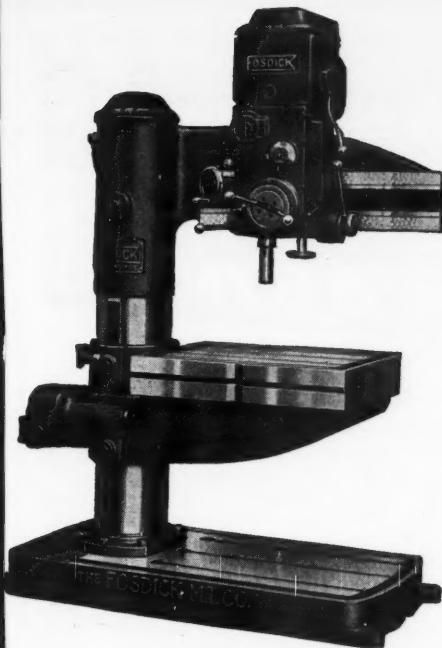
NOW AVAILABLE—FOR IMMEDIATE DELIVERY

SD4C  $\frac{1}{2}$ "  
STANDARD DUTY DRILL  
FOR  
▶ PRODUCTION  
▶ MAINTENANCE  
▶ CONSTRUCTION

OTHER **Wolf** PRODUCTION TOOLS COMING SOON  
EG2C.  $\frac{1}{4}$ " LIGHTWEIGHT DRILL • NW6C.  $\frac{1}{4}$ " STANDARD DUTY DRILL • NWS1. HEAVY-DUTY  
SCREWDRIVER • GH6. 6" HAND GRINDER • VSM. 7" ELECTRIC SANDER • NWB. PORTABLE  
BLOWER • CM4. CHISEL MORTISER • HD2. HAMMER KITS • EVG3. HIGH-SPEED  
VALVE SEAT GRINDER. FINE ENGLISH TOOLS—Every one of them performance proved.  
PRICES, DELIVERIES AND DISTRIBUTOR PARTICULARS ON REQUEST.

S. WOLF & CO LTD  
LONDON

Warehouse Stocks and Service Depot—  
New York City. Address inquiries to: U.S.  
Factory Representative, Fred. L. Stuart,  
Room 1111, 33 West 42nd Street, New  
York 18, N.Y.—ACKAWANNA 4-2255



# NOW!

## A RADIAL DRILL

*Specifically  
designed  
for sensitive  
drilling*

## FOSDICK SENSITIVE RADIAL

- Since its first official showing at the machine tool show in Chicago the interest in this Sensitive Radial has been astounding. Fosdick Machine Tool Co. being builders of both Radial and Sensitive Drills were the first concern to apply the principles of radial drilling to the sensitive field by developing the Fosdick Sensitive Radial. The machine is of comparatively simple design with the conventional radial drill base and new one piece column. However, it differs distinctly from the conventional radial drill in that it has a movable table and the arm is set at a fixed height. Both the table and arm may be swung in an arc of 360°. The adjustable table can be set at the correct height for the job at hand and

may be swung out of the way for tall jobs mounted on the base.

The head of simple design has nine speeds and four feeds. The nine speeds are controlled by a direct reading lever at the bottom left hand side of the head. The four feeds are operated by a single direct reading lever on the right hand side of the head. The feed clutch and quick return mechanism is of entirely new design.

These are but a few of the many time and cost saving features of this Fosdick Sensitive Radial.



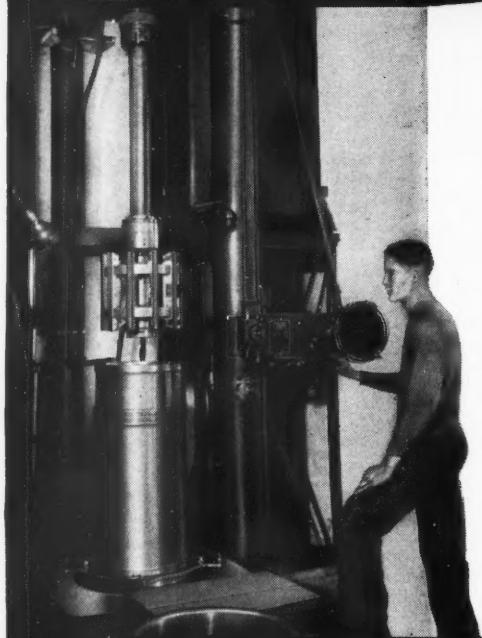
- Complete details of design, construction and operation are available in the Fosdick Sensitive Radial R.S.M.M.S. Write for yours.

# FOSDICK

MACHINE TOOL CO.  
CINCINNATI 23, OHIO

If your production involves finishing  
any type of cylindrical bore ranging  
from  $1\frac{1}{2}''$  to 30" I.D. . . .

## FULMER HONING WILL DO IT FASTER!



Almost any type of internal cylindrical surface is a *honing* possibility. The cylindrical surface can be long or short, open at both ends, closed at one end, containing different diameters, ports, shoulders or interruptions in the surface to be finished.

All of these surfaces can be finished *faster*, and *more economically*, by honing on Fulmer Honing Machines. Large amounts of stock can be removed rapidly, reducing costs of preceding operations. Working tolerances as close as  $\pm .0001''$  can be held on bore size, straightness, roundness. Any surface finish from 1 or 2 micro-inches up can be produced. And Fulmer Honing Machines are simple to operate—many users have unskilled labor running them efficiently.

Put Fulmer Honing to work speeding and *improving* your production now. Get full details today.

### CHECK THIS FOR FAST PRODUCTION HONING:

At Hunt-Spiller Mfg. Company, a Fulmer Model 15-48 Honing Machine is used to hone  $12\frac{1}{2}''$  diam., 42" length, Baldwin Gun Iron Diesel Locomotive Cylinders, removing from ".012"—".015" of stock in from 10 to 12 minutes per piece.

C. ALLEN FULMER COMPANY

1233 First National Bank Bldg., Cincinnati, Ohio

# FULMER

### PRECISION PRODUCTION EQUIPMENT

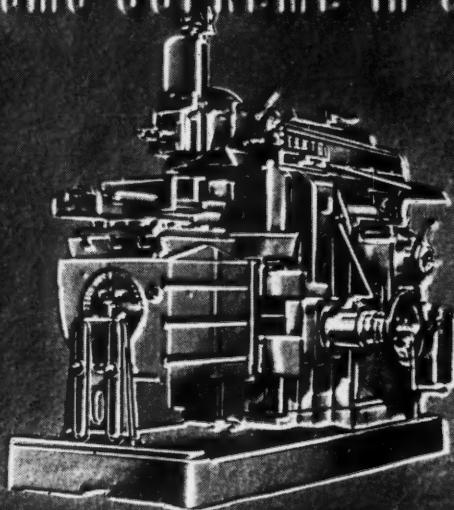


Honing Machines • Rod Borers • Piston Ring Lappers

SINCE 1912

# GEMCO

...the Name SUPREME in Shapers



Advanced Leadership in Design and Engineering

- ★ FIRST for Precision with Ruggedness...
- ★ FIRST for Adaptability...
- ★ FIRST for Increasing Production at Reduced Cost

The Shapers with the Exclusive LUBRIGARD



SAFETY DEVICE

GENERAL ENGINEERING & MFG. CO.

ST. LOUIS 16, MO.

THE LINE ON WHICH TO STANDARDIZE FOR A HIGHER STANDARD OF RESULTS

# SAMPLES...?

SEND

*Hammond of KALAMAZOO*

**YOUR SAMPLES FOR A  
COMPLETE ENGINEERING REPORT**

**NEW • BETTER • FASTER...** Grinding, polishing, buffing, deburring and finishing equipment is continually being developed here at Kalamazoo.

Our new Processing Department is equipped with 35 modern Platen, Contact Wheel, Flexible, Contour (wet or dry) Abrasive Belt Machines — Polishing Lathes — Backstands — Carbide Grinders — OD Cylindrical and Automatic Polishing, Buffing and Deburring machines on which your samples will be processed and returned for comparison.

The applications for this equipment are in the polishing and assembly department — foundry — forging — tool room — machine shop — sheet metal — deburring, etc.

For small production jobs, we have modern hand equipment — for medium production, Semi-Automatics — for high production, Full Automatic.

Send one finished and ten rough samples marked for "Hammond Sample Processing Department." Complete engineering report will be promptly sent — there is no obligation.

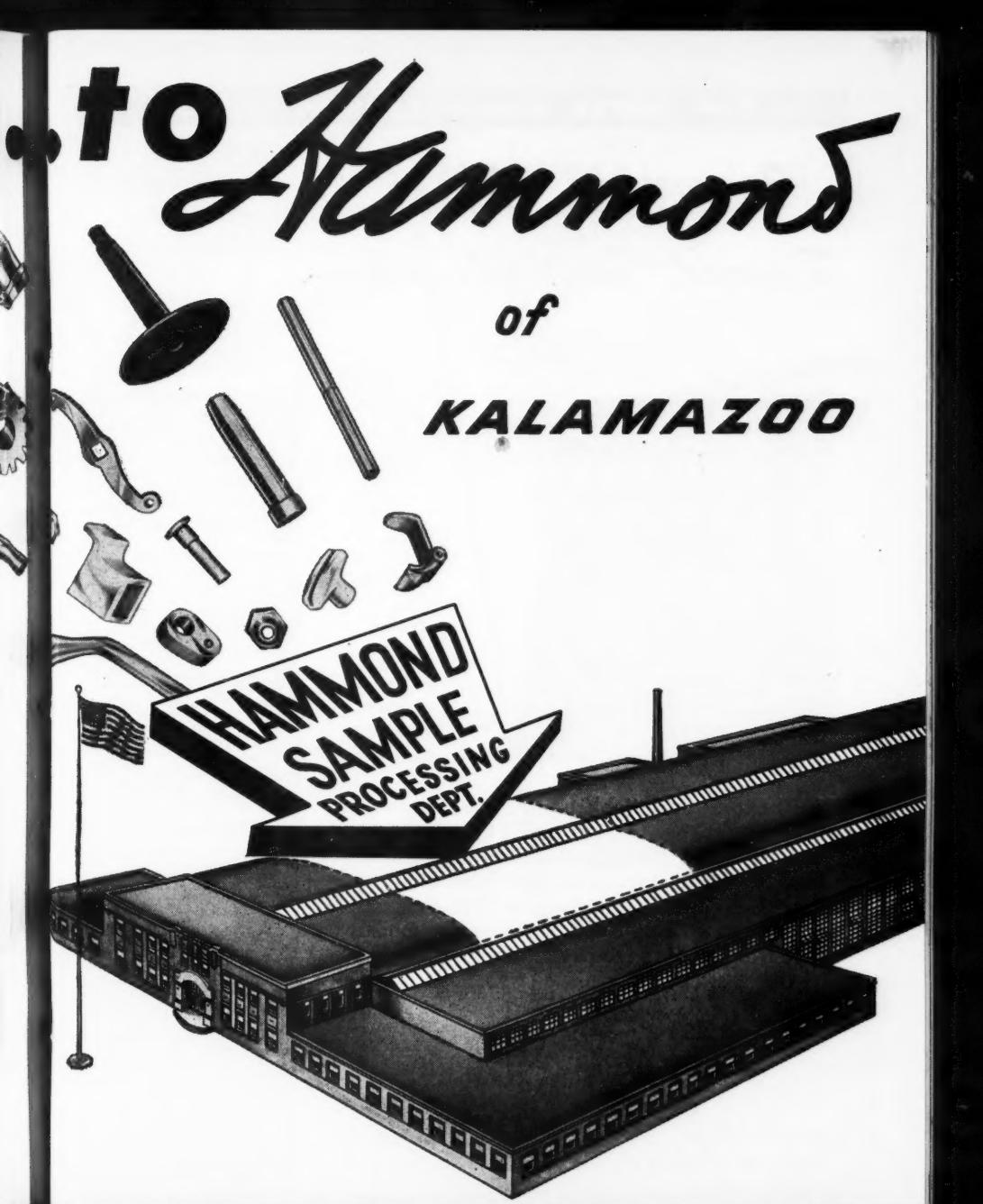


*Hammond Machinery Co.*

*to* Hammond

of

KALAMAZOO



HAMMOND  
SAMPLE  
PROCESSING  
DEPT.

Builders

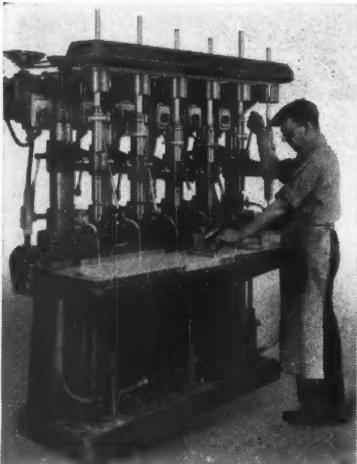
1615 DOUGLAS AVENUE

KALAMAZOO, MICHIGAN

FOR LOWER MANUFACTURING COSTS

# It's "ALL DRILL"

## Rugged. Fast. Accurate



"Buffalo"

No.  
16

Up to  
 $\frac{7}{8}$ "  
Holes

Bench  
or Floor  
Models

Not built just to "look pretty," but to give you BETTER, LOWER COST DRILLING, the "Buffalo" No. 16 Drill is rugged and rigid from spindle-tip to base. Quick speed changes from 400 to 3,000 rpm. All adjustments and controls are simple, quick, precise. Single and multi-spindle models to fit your operation. Deliveries are good.

Write for Bulletin 3730!

**BUFFALO FORGE**  
COMPANY

388 BROADWAY

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

BUFFALO, N. Y.



- ★ BACK SPOT FACERS
- ★ BAR CUTTERS
- ★ BENDING ROLLS
- ★ BILLET SHEARS
- ★ DOUBLE END PUNCHES AND SHEARS
- ★ LOCOMOTIVE SHEARS
- ★ MILL TYPE SHEARS
- ★ RAPID ACTING PUNCHES
- ★ SINGLE END SHEARS
- ★ SPRUE CUTTERS
- ★ STRUCTURAL IRON WORKERS
- ★ UNIVERSAL IRON WORKERS
- ★ DRILLS FOR THE PRODUCTION LINE
- DRILLS FOR THE TOOL ROOM

CONTINUOUS SERVICE — FASTER OPERATION — PEAK ACCURACY

# Lower Your Production Costs!



**SCHRILLO TAPS**—Commercial and Precision Ground—Standard and Special pitches. For more tapped holes per sharpening, insist on SCHRILLOTAPS—



For the production of accurate and consistent depths of countersunk holes, specify the SCHRILLO ADJUSTABLE MICROMETER STOP COUNTERSINK, a popular priced precision tool. Depth adjustments in increments of .001 of an inch.



**SCHRILLO COUNTERBORES**—For smooth, high production counterboring accompanied by long life, accuracy and dependability—Available in size range of  $\frac{1}{4}$ " to  $1\frac{1}{2}$ ".



For superior countersinking consider the high shearing action of the SPIRAL FLUTED COUNTERSINK. Available in a size range of  $\frac{1}{4}$ " to  $1\frac{1}{2}$ ".



**SCHRILLO PIPE TAPS**—Available in standard sizes and pitches—Interrupted and standard thread—Straight and taper thread.



**SCHRILLO COMBINED DRILL AND COUNTER SINKS**. A complete range of standard sizes available out of stock.

**ATTENTION PLEASE:**  
for production tapping of heat treated high tensile alloy steel, try our new "ARMOURCLAD" taps, at no additional cost.



Lower production costs are reflected on the profit side of the ledger and are a direct result of Better Tools—Better Equipment—and wide awake supervision. Let us suggest, advise, and supply whenever you are confronted with a tooling problem. A wealth of experience is at your disposal.

When the occasion demands the finest—and consistently the finest—Specify SCHRILLO. Special tools and gages made to your specifications. Consult our local distributor for prompt and courteous service.

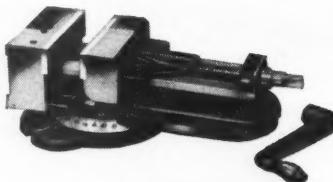
# SCHRILLO

*Aero tool Engineering Company*

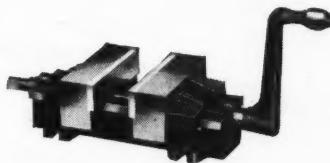
**Send for Bulletin No. 44  
describing these**



## **2 NEW VISSES**



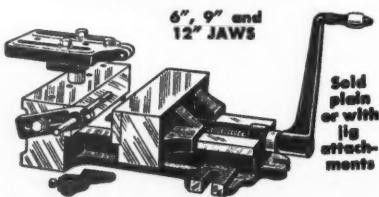
**SWIVEL-BASE**



**CENTERING**

Finely and accurately made. Unique ADJUSTABLE ZERO POINTER. Vise removable from base, to use plain. Screw never protrudes under work, cannot be drilled into. Usable with Jig Attachments.

### **MULTI-PURPOSE**



The famous Graham Vise that saves so much toolmaking cost by its special attachments. Three sizes to 124 lbs. for shaper, planer, drill press, radial, miller, grinder.

Centers work regardless of size variations, as both jaws move toward center. This gives double-fast action. Handle fits on either end.

### **"ADJUST-ANGLE" KNURL HOLDER**

*Straight  
Knurls  
Cut Many  
Patterns*

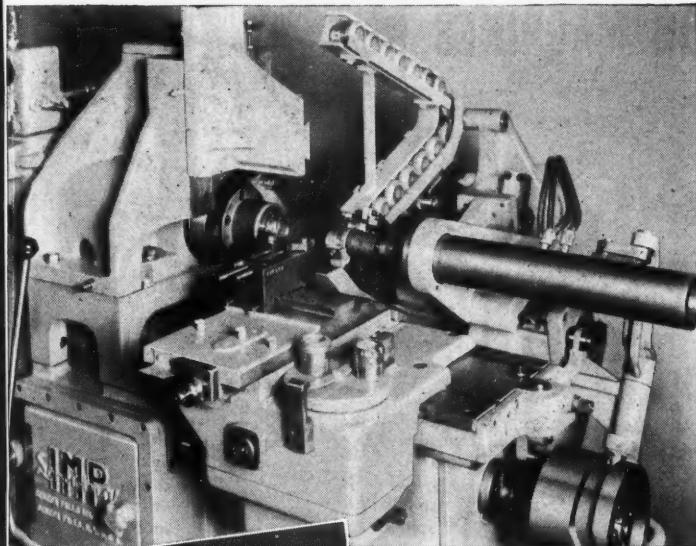


With shank made to fit your turret or tailstock, this Holder knurls work up to 2½" dia. with a variety of patterns using only straight knurls.

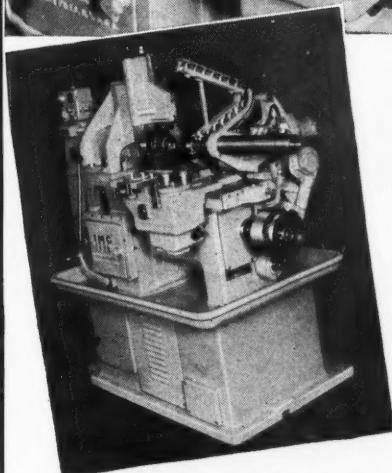
**GRAHAM MFG. CO., 38 Bridge St., East Greenwich, R. I.**

# MACHINE OF THE MONTH

PREPARED BY THE SENECA FALLS MACHINE CO. "THE Lo-swing PEOPLE" SENECA FALLS, NEW YORK



The close-up view of the machine shows the cams (covers removed) which operate the automatic loader and which assure perfect timing of all movements.



Lo-swing Lathes fitted with Automatic Loaders are usually grouped together in series of two or more as one operator can easily keep the loading chutes on several machines filled.

## AUTOMATICALLY LOADED *Lo-swing* IMP TURNS BRONZE COUPLINGS AT FAST RATE

**Problem:** To finish turn spherical end of bronze couplings. Operation consists of turning outside diameter, forming large radius, facing inside shoulder, and chamfering inside diameter.

**Solution:** The fully-automatic Lo-swing IMP Lathe selected for this job was fitted with a new type loader, designed for handling fairly heavy castings. The machine is entirely automatic. Bronze couplings which have been previously turned and threaded on the small end are placed in the loading chute and fed by gravity into a cradle where they are picked up by the injector head and chucked in an air-operated collet chuck. Turning of the O. D. and chamfering of the I. D. are accomplished with two tools mounted on the front slide, while squaring of the shoulder and forming of the radius are done with two tools mounted on the vertical slide. The finished piece is then automatically ejected and picked up by a safety finger which in turn drops it on the evacuation chute. The cycle is then repeated. A high hourly production is maintained due to the rapid operation of the automatic loader.

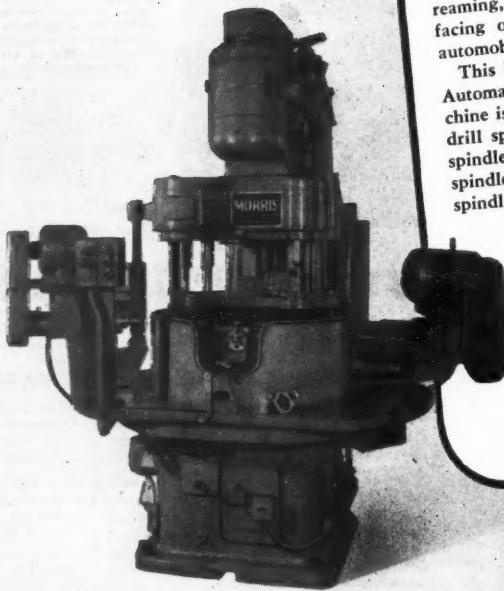
SENECA FALLS MACHINE CO., SENECA FALLS, N. Y.

PRODUCTION COSTS ARE LOWERED WITH S

# MORRIS

MOR-SPEED  
PRODUCTION MACHINES

Designed and Built  
To Meet  
Your Specific Job Needs



The machine illustrated here was designed and built for drilling, reaming, counterboring and spot-facing operations on housings for automobile oil pumps.

This Hydraulic Vertical 6-station Automatic Indexing Drilling Machine is equipped with four vertical drill spindles, two vertical reaming spindles, one vertical counterboring spindle, one vertical spotfacing spindle and three horizontal drill spindles. Six hand clamp holding fixtures enable operator to load and unload machine easily and quickly at each indexing of machine.

If you have a high production problem, consult MORRIS — MORRIS will build the machine to fit your need.



**The MORRIS Machine Tool Co.**  
CINCINNATI 3, OHIO



Powered by compressed air, this new invention will throw a baseball faster and more accurately than any human can. It can be adjusted to pitch 8 different curves, and will groove the plate every time, at the exact height desired. Eagerly adopted by major league ball clubs, this mechanical pitcher even takes on batting chores—when set up over home plate, it will lay down a 400 foot fungo in any direction.

The barrel, curve adapter and air chamber of this "iron man" are seamless steel tubes. The barrel bore is required to fit a baseball without seizing, yet tightly enough to prevent loss of compressed air power while firing. Despite this unusual specification, tubing of the required size is regularly supplied—right out of Frasse warehouse stock.

You're invited to be choosy when you work with Frasse tubing stocks. Sizes in mechanical tubing range from a convenient  $\frac{3}{32}$ " to  $10\frac{1}{2}$ " O.D.—and unusually complete inventories are equally handy in stainless tubing, aircraft tubes and condenser and pressure tubes. What are your requirements? *Peter A. FRASSE and Co., Inc., 17 Grand Street, New York 13, N. Y. (Walker 5-2200) • 3911 Wissahickon Avenue, Philadelphia 29, Pa. (Baldwin 9-9900) • 50 Exchange Street, Buffalo 3, N. Y. (Washington 2000) • Jersey City • Syracuse • Hartford • Rochester • Baltimore*

**FRASSE**

for Steel Tubing

Seamless and Welded Mechanical  
Pressure and Condenser Tubes  
Stainless Tube, Pipe and Fittings  
Tubing to Aircraft Specification



## *The Hardest Possible Metal Sawing*

... cutting off test specimens in the Metallurgical Laboratory of this giant steel plant. There is no time for pampering here. Each saw must handle anything that comes, as it comes—the hardest steels and toughest alloys, in all degrees of hardness—in any size, any form or condition—because each heat, each drawing, and each forming run has to be tested.

The steel mill where these pictures were taken reports that these saws have been operating 24 hours, 7 days a week for the last five years. Maintenance cost has been practically non-existent. Furthermore, the efficiency of these saws has made possible the elimination

of an equal number of other sawing machines in the department.

The answer to your cut-off problem, whether large or small, will be found in our new C48 catalog. The services of our field engineers are also available in every locality. Send for either or both now.

### ARMSTRONG-BLUM MFG. CO.

"The Hack Saw People"  
5700 Bloomingdale Ave., Chicago 39, U.S.A.



No. 1, No. 2 Series



No. 4B Series



No. 6 Series



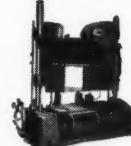
No. 9A Series



No. 8 Series



No. 10 Series



No. 24 Series

**MARVEL** *Metal Cutting*  
**SAWS**  
Better Machines—Better Blades

*Avey's* PRESCRIPTION FOR

## PRODUCTION!



Fill out this form for Avey's FREE  
Engineering Estimate of your production problems!

### INFORMATION FOR ESTIMATES

1. MATERIAL—HARDNESS

2. CASTING OR FORGING DRAWING  
PREFERRED WITH WORK MARKED

3. PRODUCTION REQUIRED  
PER HOUR . . . OR PER WEEK

4. PREFERRED METHOD

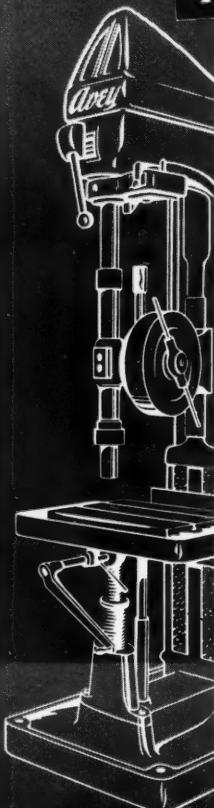
5. LOCATING POINTS

6. OPERATION DRILL—TAP—  
END MILL—HOLLOW MILL

7. VOLTAGE

8. HOW IS JOB BEING DONE NOW  
STANDARD . . . SPECIAL?

9. SUBMIT PROPOSAL TO



If something's wrong with you, you have your doctor prescribe a cure. If a difficult shallow or deep hole drilling or tapping problem is cutting down your plant's production or efficiency, let Avey Engineering prescribe the cure! No obligation! Mail this today!

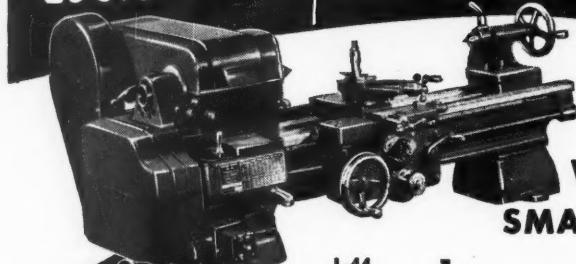


CINCINNATI, OHIO

*Avey*

DRILLING  
MACHINES

*Look for these new Features...*



**SHELDON**  
L-44  
10 1/8" Swing  
Lathe



Sheldon  
TRBS-56  
11 1/4" Swing  
Lathe



Sheldon  
TU-1248P  
13 1/8" Swing  
Lathe

## WHEN BUYING SMALL LATHES

1. Both basic (a) and operating (b) accuracy of the bed—(a) Ways held to tolerances of .005" per foot horizontal and parallel alignment. (b) Engineered distribution of mass to give extreme rigidity without excessive bulk.
2. Timken Precision Taper Roller Bearings—for regular operating speed and permanent accuracy.
3. Increased Collet Capacity.
4. Greater Swing for size.
5. Greater Power at tool point.
6. V-Belt Motor Drive with increased speed range.
7. Lower prices—far more tool for the money resulting from modern manufacturing methods, in a specially built plant that is "tooled to the teeth" with the finest machine tool building equipment.

*Write for the New G-48 Catalogue of Sheldon Lathes and check each for these 7 important features.*

**SHELDON MACHINE CO. Inc.**  
Manufacturers of the One Precision Lathe & Milling Machine in Every Size  
4250 N. KNOX AVENUE • CHICAGO 11, ILLINOIS, U.S.A.



Photo courtesy The Astatic Corporation, Conneaut, Ohio

Checking a phonograph precious metal needle cartridge for stylus projection, tip radius and included angle on a Jones & Lamson 14" Pedestal Optical Comparator.

# "The only Satisfactory way"

"We find this the only satisfactory way to check such small parts, as the tip radii range from .0028" to .003". In addition other important dimensions can readily be checked."

Says The Astatic Corporation, manufacturer of sound reproducing equipment, who use Jones & Lamson Comparators to help maintain the highest standards of operating efficiency for its products.

Many components and products formerly inspected by slow, tedious methods, that retarded production and drained profits, are now inspected in seconds or minutes on Jones & Lamson Comparators, by operators with only a minimum of instruction. Savings are made all along the line, in gage cost, in time and in overhead.

Our engineers are inspection specialists; their knowledge of holding fixtures, handling methods and suitable Comparator equipment has saved hundreds of thousands of dollars throughout the country. Call, write or wire for their services today.

SCREENS  
for  
JONES & LAMSON  
OPTICAL COMPARATORS  
are  
now  
available  
in  
standard  
sizes  
and  
types.  
Write  
to  
Dept. 710  
for  
your  
copy.

DID YOU  
KNOW...  
THAT JONES & LAMSON  
COMPARATORS ARE  
USED TO INSPECT  
PEN POINTS?

**Optical Comparator Division**  
**JONES & LAMSON MACHINE COMPANY**  
Springfield, Vermont, U.S.A.  
**MACHINE TOOL CRAFTSMEN SINCE 1835**



has  
your shop got  
the  
**"TOOL ROOM  
TROTS?"**

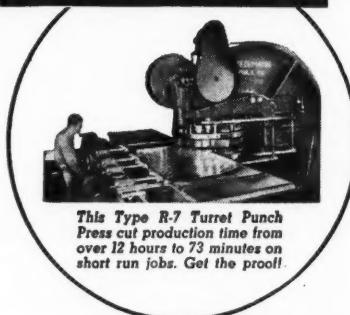
How much time is wasted "on the road" while punch press operators and set-up men go back and forth to the tool room to get punches and dies for a short run set-up?

#### **SEE A WIEDEMANN**

With a Wiedemann Turret Punch Press, the operator remains at the machine . . . no need to make numerous time consuming "trips," since 11 to 32 punches and dies are carried in the turret . . . ready for instant piercing . . . always at the operator's fingertips. In addition, a Wiedemann saves you hours of layout time. On some machines, layout time is completely eliminated because of material handling gauge tables that position the material ready for piercing by obtaining the X and Y coordinate from blueprints or charts.

**WIEDEMANN MACHINE COMPANY**  
4219 WISSAHICKON AVENUE • PHILADELPHIA 32, PA.

Send today for the complete story of short run piercing economy . . . Bulletin 92 . . . and then if you'd like to see a Wiedemann in operation, we'll tell you the shop nearest you that does short run piercing with a Wiedemann.



This Type R-7 Turret Punch Press cut production time from over 12 hours to 73 minutes on short run jobs. Get the proof!

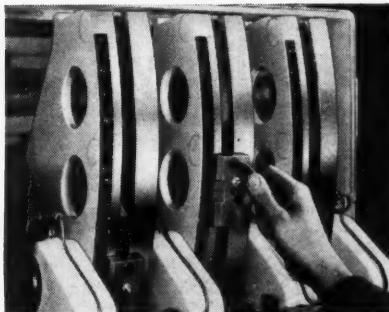
# No cam worries with a Warner & Swasey 5-Spindle Automatic



*NO CAMS  
TO DESIGN*



*NO CAMS  
TO MACHINE*



*Patented "Quick Set" quadrants cut set-up time,  
quickly adjust to any feed stroke between 0 and 5 inches.*



*NO CAMS  
TO STORE*



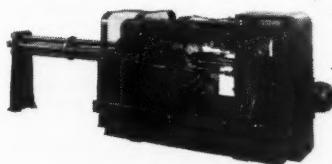
*NO CAMS  
TO FIND*



*NO CAMS  
TO CHANGE*

JUST make a simple setting and there you have your new feed stroke, clearly indicated on a graduated scale. Yes, it's as easy as that! All feed strokes are quickly available for both longitudinal and cross slides. No more need to sacrifice cycle time because the "right" cam is not on hand or because a cam change would take too long. You always get your exact feed stroke quickly on the Warner & Swasey 5-Spindle Automatic.

Full information on these new machine tools will show you how their many new features and design improvements can cut costs, boost production in your shop. Ask your nearest Warner & Swasey office for full particulars or write to Warner & Swasey, Cleveland 3, Ohio.



*3-Spindle Bar Machines  
—1½" Standard Capacity  
—2½" Oversize Capacity  
3-Spindle Chucking Machine—6" Swing*

*IT'S SIMPLE TO SET UP*

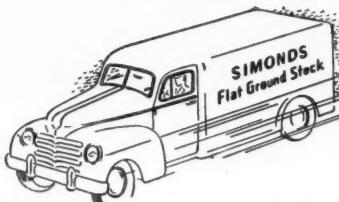


**WARNER  
&  
SWASEY**  
Machine Tools  
Cleveland

*You Can Machine It Better, Faster, for Less... with a Warner & Swasey*

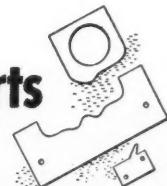
TURRET LATHES, MULTIPLE & SINGLE SPINDLE AUTOMATICS, PRECISION TAPPING AND THREADING MACHINES

**Get Delivery Today...**



**Save Time and Money...**

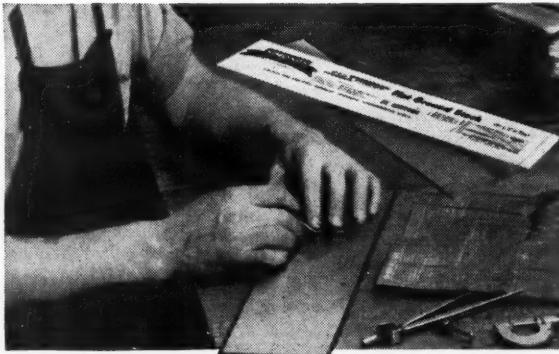
# **Make your own Dies, Jigs and Parts**



**HERE'S A COST-CUTTING NATURAL** that you can cash in on without any delay. Get Simonds "Red Streak" Oil Hardening Flat Ground Stock from your Industrial Supply Distributor. He has it in all standard sizes . . . uniformly annealed for easy machining and proper hardening (with directions on the individual envelope) . . . cut to 18" length . . . accurately ground to standard thicknesses and widths . . . with square edges . . . and with smooth surfaces for accurate layout work.

*No grinding to size.* Just cut it . . . with Simonds Metal-Cutting Band Saws . . . to your own designs of punches, dies, gages, jigs, fixtures, templates, stamps, shims, small machine parts, and other items which you now have to order and wait for. Call your Distributor *today*.

**BRANCH OFFICES:** 1350 Columbia Road, Boston 27, Mass.; 127 S. Green St., Chicago 7, Ill.; 416 West Eighth St., Los Angeles 14, Calif.; 228 First St., San Francisco 5, Calif.; 311 S. W. First Ave., Portland 4, Ore.; 31 W. Trenz Ave., Spokane 8, Washington. Canadian Factory: 595 St. Remi St., Montreal 30, Que.



**SIMONDS ALSO MAKES**



**Circular Metal-Cutting Tools  
(Solid-Teeth, Inserted Teeth  
Segmental)**



#### Metal-Cutting Readiness



"*Hot End*" Neckdown



"Top Team" Films

PLUS A WIDE LINE OF TOOLS FOR CUTTING WOOD, PAPER, PLASTICS



**SIMONDS** "RED STREAK"  
Oil Hardening  
**FLAT GROUND STOCK**

"When you use Simonds you stay in the Highlands . . . of *consistent cutting efficiency*"

# Reaming

## accurate, straight, round holes

*With*

**BARBER-COLMAN  
CARBIDE TIPPED  
REAMERS**



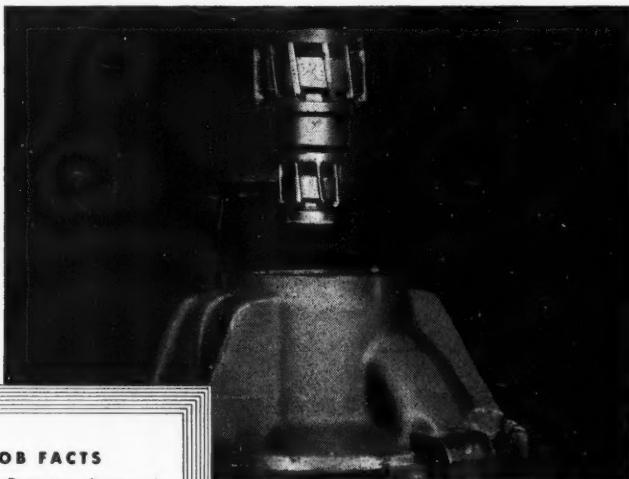
Sand pockets in these motor truck differential housings caused early dulling of high-speed steel reamers and unsatisfactory finish on the reamed surfaces. Barber-Colman Carbide-Tipped Inserted Blade Reamers were tried, and tool life jumped from 150 to 3000 pieces per sharpening.

These reamers are designed with irregular blade spacing, and special cutting and relief clearances to provide smooth cutting action. Two holes are reamed straight and round, in alignment. Diameters are held within .001". The ability of the carbide to resist wear in this abrasive material greatly improves the finish, and the irregularly spaced blade design has eliminated the tendency of the reamer to pattern and form welds.

Consult Barber-Colman Reamer Engineers for application of Carbide-Tipped tools to your reaming problems.

**Barber-Colman Company**

GENERAL OFFICES AND PLANT 170 LOOMIS ST., ROCKFORD, ILLINOIS, U.S.A.



### JOB FACTS

- Operation — Ream two diameters in alignment
- Material — Malleable Iron Casting
- Tool Life — 3000-4000 castings per sharpening
- Tolerance — Diameters finished within .001"



MODERN MACHINES REWARD  
*Modern Cutting Tools*

**lightweight champ**



The new Traytop line of light duty geared head engine lathes (10", 12½", 15", and 18" swing sizes) offers many "high price" lathe features at truly low cost: 12 spindle speeds, selected by color-coded dial, 48 thread and feed changes, exceptionally large spindles, anti-friction bearings, double-walled apron, totally enclosed gear box, many others. Distance between centers from 18" to 60". 15" and 18" sizes can be furnished with gap and gap block. Write for Bulletin T-100.



**cintilathe**

**CINCINNATI LATHE & TOOL CO.  
CINCINNATI 9, OHIO**

# NEW!

## The Art

OF

BLANCHARD SURFACE GRINDING



SEND FOR YOUR FREE COPY

	MATERIAL:	Soft, Low Carbon Steel, Steel Coatings, Malleable Iron, Head Forgings, Soft Alloy Steel.	FEEDS INCHES PER REV.	DEPTH OF CUT, INCHES	SPD. INCHES PER MIN.	TABLE SPEED RPM	WHEEL TYPE
Plate 12	FLANGE MATERIAL	Surface	$\frac{1}{16}$ "	$\frac{1}{16}$ "	No. 18-36"	33 RPM .024"	24950 (1)
	FILTER TANK Welded Steel			$\frac{1}{16}$ " 49 sq. in.	No. 11-16"	24 RPM .022"	24940
	METEROL VALVE BODY Cast Steel Plate 13			$\frac{1}{16}$ " 12 .002"	No. 11-16" 72 sq. in.	24 RPM .022"	24940
Plate 14	SPROCKET BLANKS Boiler Plate			$\frac{1}{16}$ " A Side Commercial -.0000", .0005"	No. 16-30" 3 132 sq. in.	20 RPM .020"	24950
	JACK BASES Malleable Iron Plate 14			$\frac{1}{16}$ " Commercial -.0035"	No. 18-36" 53 104 sq. in.	18 RPM .018"	24950
Plate 15	RUBBER SOLE MOLD PLATE Speed Case Plate 15			$\frac{1}{16}$ " A Side Commercial -.002"	No. 18-36" 878 sq. in.	32 RPM .012"	24950
	MAGNETIC CHUCK Soft Steel Plate 16			.030" Water... light Oil Film .0003"	No. 27-90" 1 2130 sq. in.	5 RPM .004"	24950 Segments

[1] A 24950 would normally be used for this cover surface. A smaller wheel was used to produce other surfaces.

Typical applications in malleable iron, Commercial, 25-50 sheetsteeling, Sheet, 13-24 sheetsteeling, 2 in 12 aluminum.

This new Booklet, "The Art of Blanchard Surface Grinding," will assist you in answering such questions as:

1. What wheel to use
2. How to chuck and hold work
3. How to get fine finishes
4. Grinding for flatness
5. Correct feed and table speed
6. How to grind spherical surfaces
7. How to get maximum production
8. How to figure grinding costs

### COUPON

Without obligation, please send me the new booklet, "The Art of Blanchard Surface Grinding."

NAME..... TITLE.....

COMPANY.....

CITY..... STATE.....



The BLANCHARD MACHINE COMPANY

64 STATE STREET, CAMBRIDGE 39, MASS., U.S.A.

# A NEW GEM in



INDEPENDENT PNEUMATIC TOOL COMPANY  
Aurora, Illinois

Birmingham      Boston      Buffalo      Chicago      Cincinnati      Cleveland      Denver  
Detroit      Houston      Los Angeles      Milwaukee      New York      Philadelphia  
Pittsburgh      St. Louis      St. Paul      Salt Lake City      Seattle  
San Francisco      Toronto, Canada      Sao Paulo, Brazil      London, England

Export Division: 330 West 42nd Street, New York 18, N.Y.

the *Thor*  
*Silver Line*

A new symbol of distinction in high quality, high lustre portable electric tools—by *Thor*.

**PACKAGE OF STALL-PROOF POWER!**

*... the smallest, lightest, most  
POWERFUL  $\frac{1}{2}$ -inch portable  
electric drill in the world—a  
statement no other manufacturer  
can make!*

*Thor*  
**PORTABLE POWER  
TOOLS**

PNEUMATIC TOOLS • UNIVERSAL AND HIGH FREQUENCY ELECTRIC TOOLS • MINING AND CONTRACTORS TOOLS



**Why Carry  
the Motor...  
When you need  
only hold the Tool!**

**MALL 3 H.P.  
GEARED HEAD  
GRINDING UNIT**

**Mall**  
REG. U.S. PAT. OFF.

**FLEXIBLE SHAFT  
GRINDER**

With the motor mounted on an easy-rolling pedestal or overhead trolley, a Mall Flexible Shaft Grinder—equipped with lightweight working tools—enables you to finish larger areas faster, easier, cheaper with less fatigue. Because the motor is not carried, more copper and iron is used to protect against burnouts on overloads, more power is developed, and the motor is sealed against dust, grit, steel particles, dirt, grease and vapor. The lightweight working tools are more comfortable to hold than heavy self-contained tools, and the attachments for grinding, sanding, buffing and polishing can be interchanged by simply pressing a button. 3 H.P. Geared Head,  $\frac{3}{4}$ , 1,  $1\frac{1}{2}$  H.P. Direct Drive and  $\frac{3}{4}$  H.P. Countershaft models are available.

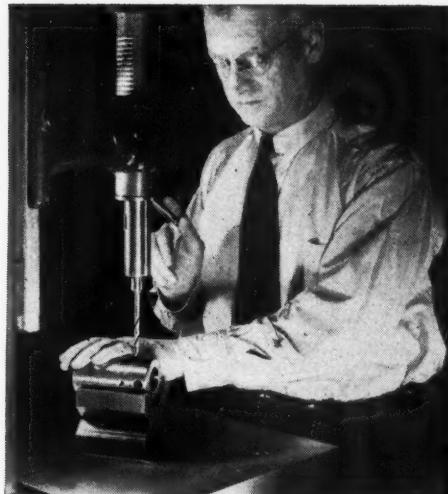
*Ask Your Supplier to demonstrate a Mall Flexible Shaft Grinder in your shop TODAY  
and write for FREE booklet "Mall Grinders."*

**MALL TOOL COMPANY**

**7814 South Chicago Avenue**

**Chicago 19, Illinois**

**Preferred by Master Craftsmen**

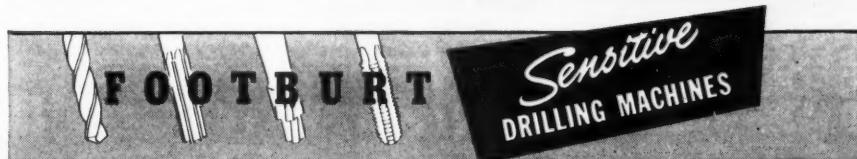


FOR TOOL ROOM  
OR  
PRODUCTION LINE



Built carefully to provide the required accuracy for fine tool room work Footburt sensitives are designed with the weight and stability to maintain close tolerances on day after day production work. The correct speed for a wide range of drilling, reaming, and counter-boring operations is instantly available. Write for full information on this great line of sensitive drilling machines.

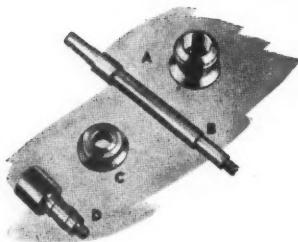
**THE FOOTE-BURT COMPANY**  
CLEVELAND 8, OHIO  
Detroit Office: General Motors Building



HARLEY-DAVIDSON MODERNIZES ITS SHOP WITH . . .



## GREENLEE SIX-SPINDLE AUTOMATICS



### SAMPLES OF MEDIUM AND SHORT-RUN WORK AT HARLEY-DAVIDSON . . .

- (A) Upper Head Cone Seat, C1118 stock, run on 2" Greenlee in lots of 6000.  
(B) Armature Shaft, C113 stock, run on 2" Greenlee 100% faster than by previous method.  
(C) Starter Clutch, NIE8617 stock, run on a 2" Greenlee in lots of 1000.  
(D) Rear Wheel Brake Operator, Stock NIE8617 stock, run on a 15" Greenlee in lots of 7000 with a time of approximately 20 seconds per piece.

Ed Rathsack, screw machine foreman at Harley-Davidson Motor Co. of Milwaukee for 20 years, says: "I've been on screw machines for forty years. We got our first Greenlees just before the war and now have 16 of them. They have proved out very well. Set-ups can be made quickly and it is easy to duplicate previous experience. We have a lot of short and medium-run jobs of 800 to 10,000 pieces and set-up efficiency is a big help when you are trying to keep costs down on work of this kind. Standardized tooling helps, too. We appreciate the low investment in interchangeable cross-slide cams, and we like the quick setting on the main tool slide. For our kind of work, the Greenlees are good machines." (Mr Rathsack is the man with the galluses at the first machine — a 2" Greenlee Six — in the picture above. Harley-Davidson Motor Co. manufactures a widely-known line of Motorcycles, Servi-Cars, and Package Trucks.)



**WRITE FOR MORE FACTS**  
Send for this 20-page book describing the Greenlee timesaving and cost-saving features.

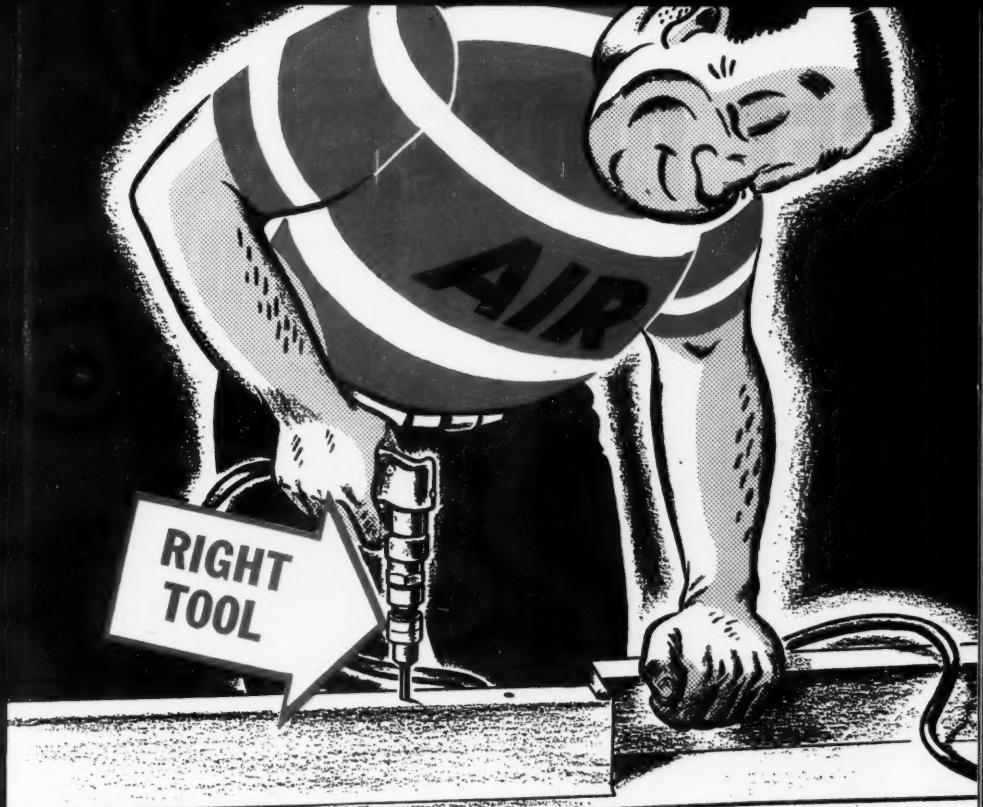
**SEE IT MOVE!**  
Ask to see our 40-min. sound movie showing all details of building a Greenlee "6".



**GREENLEE BROS. & CO.**

1890 MASON AVENUE, ROCKFORD, ILLINOIS

MULTIPLE-SPINDLE DRILLING, BORING, TAPPING MACHINES • AUTOMATIC SCREW MACHINES • AUTOMATIC TRANSFER PROCESSING MACHINES



## RIGHT DRILLS CUT COSTS 50%

THIS manufacturer of road building equipment drills hundreds of  $\frac{3}{8}$ " holes in a cab frame, using universal electric drills with a load speed of about 2000 R.P.M. Drilling was slow because of bulk of the tool.

The Rotor Application Engineer suggested a light-weight, 4000 R.P.M. Rotor Air Drill. Results:

**Easy handling.** Tool weighs only 1 lb.-10 oz.

—is easy to maneuver. Side-to-center distance of tool is only  $1\frac{3}{8}$ "—makes it easy to get at hole locations.

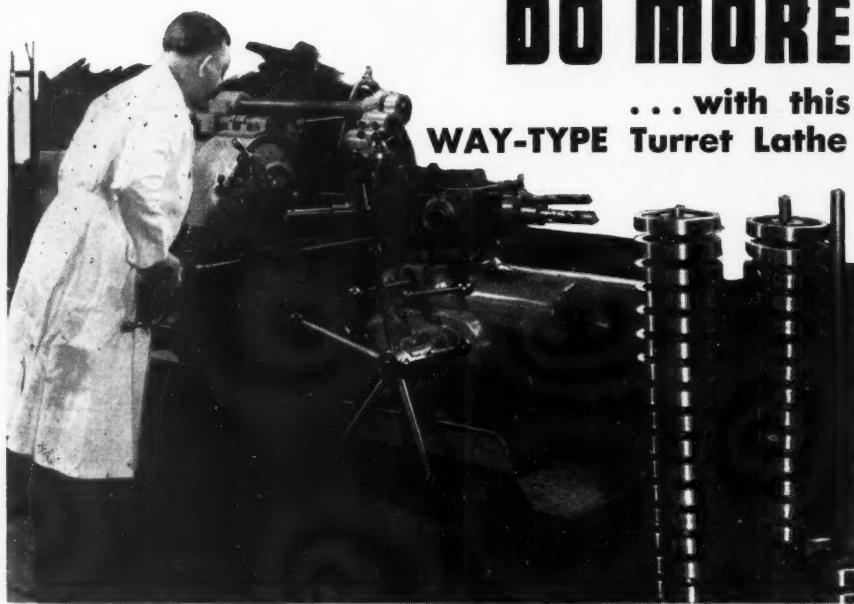
**Twice as fast.** Higher speed under load gets out more work. On this job, it cuts drilling cost in half.

There's no obligation for a study of *your* operations to make similar improvements.

AIR O'TOOL



# GET MORE... DO MORE



... with this  
**WAY-TYPE Turret Lathe**

**T**HE Lodge & Shipley Acme Way-type combines the advantages of conventional Ram-type and Saddle-type lathes. This lathe is especially designed for jobs requiring the normal capacity of the Ram-type lathe and yet needing the additional turret support offered in Saddle-type lathes. It costs less, needs less floor space, uses less expensive tooling than the Saddle-type lathe . . . yet it operates with the ease and facility of the Ram-type.

An additional feature of this lathe permits the turret to travel 20 inches compared to only 14 inches on the Ram-type. Rigidity is greater than the Ram-type because the turret is always supported on the bedways. For long hole boring this additional support offers greater accuracy not possible with the Ram-type.

Write for Booklet 667 giving full information on the Lodge & Shipley Acme Way-type Lathe.

THE **Lodge & Shipley** COMPANY  
CINCINNATI 25, OHIO

MACHINE TOOL DIVISION • 3055 COLERAIN      SPECIAL PRODUCTS DIVISION • 800 EVANS ST.

*High Production on Many  
Sizes and Materials - with*



**GARDNER  
Double  
GRINDERS**

**T**HE versatile machine shown above is equipped with a feed-thru type fixture which will handle large-volume production, on many sizes of parts, and many kinds of materials. For example, several sizes of hard rubber washers are loaded into an inclined trough, from which a V-belt feeder carries them through the machine in a continuous stream. Opposed abrasive wheels grind TWO parallel sides with ONE pass. Our engineers will be glad to explain how a GARDNER Double GRINDER will give you high production on a wide range of sizes of hard-to-handle parts, and in many different materials — while grinding within close tolerances, and at high rates of production.

Write us about your parallel-surfacing needs—or send for our DOUBLE Grinder Bulletin.

**WORK DATA**

Part	Washers
Material	Hard Rubber
Operation	Grind Two Sides
Tolerances	.001" to .002" Parallel; .003" Uniformity
Stock Removal	.030" Maximum Overall
Production	25 to 30 Pieces Per Minute
Feed	Semi-Automatic Feed Thru Fixture
Machine	No. 115-18 Gardner Double Grinder

Use Modern  
**GARDNER**  
**WIRE-LOKT**  
Abrasives  
on YOUR  
Disc Grinders!



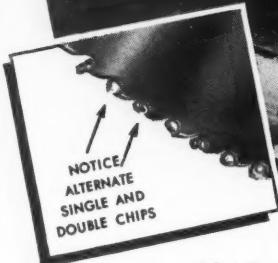
**GARDNER - GRIND  
YOUR Flat SURFACES**

**GARDNER MACHINE COMPANY**

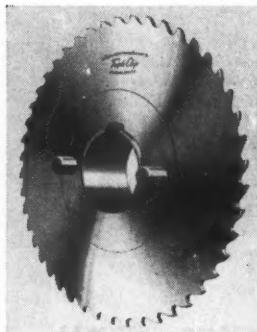
428 East Gardner Street • • • Beloit, Wisconsin, U.S.A.

# More POWER to your Blade!

Only  
M & M builds  
**ALL 3:**  
CIRCULAR SAW  
SAW BLADE  
BLADE GRINDER



Motch & Merryweather Slitting Saws have an exclusive dual drive feature through which balanced power is transmitted, eliminating



M. & M.'s exclusive dual drive delivers more power to the blade without danger to the driving means. Ample side clearance is ground into the blade down to the broad hub. Standard dual drive adaptors are designed with ample keyway to more than satisfy tough cutting requirements.

**Motch & Merryweather**  
**Triple-Chip SLITTING SAW**  
**and DUAL DRIVE ADAPTOR**  
**insure more profitable**  
**slotting production.**



**• MORE POWER      • HIGHER PRODUCTION**  
**• LOWER COSTS      • LESS BREAKAGE**

the stresses which cause breakage. A broad, flat hub affords plenty of surface contact for rigid holding, which balks tooth weaving tendencies. Accurate slotting results. Our exclusive Triple-Chip tooth form breaks up and distributes the cutting load, permitting heavier feeds. Deep gullets increase blade strength and produce curling, self-ejecting chips (no clogging). You need fewer blades, since M. & M.'s exclusive adaptors fit many arbor sizes. Three standard tooth spacings in every diameter and thickness aid the cutting of thick or thin sections.

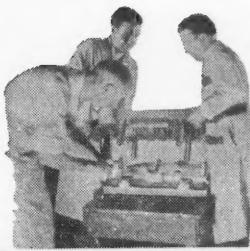
**Write for our Bulletin "D-10"**

SEE OUR EXHIBIT AT A. S. M. EXPOSITION, PHILADELPHIA, OCTOBER 25-29

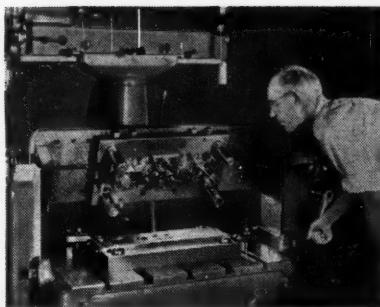
**THE MOTCH & MERRYWEATHER MACHINERY CO.**  
**PENTON BUILDING**

CLEVELAND 13, OHIO





Hand methods are slow and costly.



With the Moore Die Flipper 1 man does the work of 3.

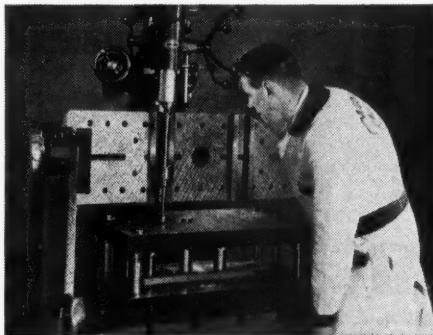
## Die assembling now mechanized

Is your toolroom still in the grunt-and-groan era of trying out and assembling large dies? Then it's time you investigated the revolutionary new Moore Die Flipper.

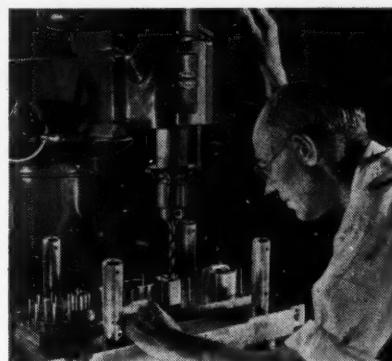
*Without physical effort one diemaking can perform all the operations of die-assembling:* Take apart, turn over, drill, tap and try out. The Die Flipper will be a money-saver in your toolroom from the start, for it can also be kept busy as a radial drill.

An eight-page catalog, with over 20 photographs and drawings, is just off the press. It's yours for the asking.

**MOORE SPECIAL TOOL COMPANY, INC.**  
**730 UNION AVENUE, BRIDGEPORT 7, CONNECTICUT**

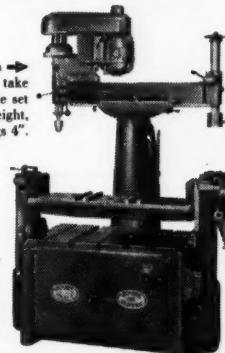


← Counterboring for heads of screws tapped into punch flange, showing the use of  $\frac{3}{4}$ " chuck with long shank.



Drilling punch in place. Spring holes are also drilled. Radial drill has  $1\frac{1}{2}$ " capacity. Tapping is done in same set-up with Lassy Tap Set.

Moore Die Flipper stands →  
5'6" x 7 $\frac{1}{2}$ ' high. It will take  
apart and flip over a die set  
20" x 40" with 12" shut height,  
pins engaged in bushings 4".



# ADD TO YOUR TOOLROOM

JIG BORERS

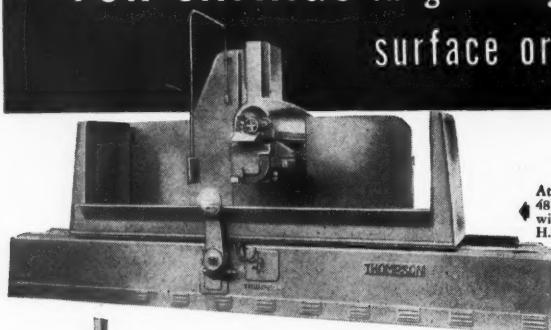
JIG GRINDERS

DIE FLIPPERS

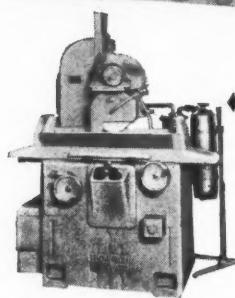
PANTO-CRUSH WHEEL DRESSERS

HOLE LOCATION ACCESSORIES

*Investigate* the complete line  
of Thompson Machines  
**FOR SAVINGS** in grinding every flat  
surface or contour

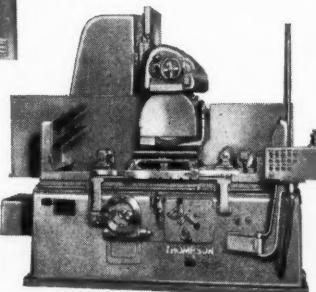


At left—Thompson Heavy Duty Type CX 36" x 48" x 120" Hydraulic Surface Grinder. Equipped with super precision spindle powered with 40 H.P. motor.



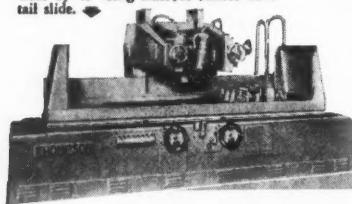
At right—Thompson Type "F" 6" x 10" x 18" Hydraulic Surface Grinder. This machine is arranged to utilize a new principle of applying coolant to the grinding wheel. All of the coolant is applied through the grinding wheel making it possible to grind exceedingly thin sections without burning or warping the work.

At right—Thompson Type "C" 16" x 16" x 36" Truforming Grinder. The latest design of a Truforming (Crushed Wheel Grinding) machine arranged with Thread Roll Die Grinding Fixture equipped with 20" dia. x 6" face wheel driven by 30 H.P. motor.

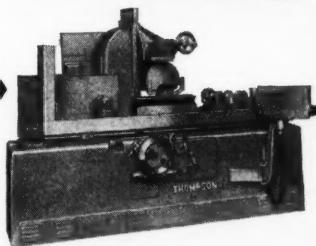


At right—Thompson Type "B" 12" x 11" x 36" Truforming Grinder. A new design of a popular Truforming (Crushed Wheel Grinding) machine arranged for production grinding of intricate contours.

Below—Thompson 12" x 11" x 48" Dovetail Way Grinder, designed to eliminate the expensive job of hand scraping machine tool dovetail way bearings. The machine illustrated has capacity for a 12" wide by 48" long male or female dovetail slide.



See Our New  
32 Page Catalog  
in Sweets—Or  
Write for Copy



**The Thompson Grinder Co., Springfield, Ohio**

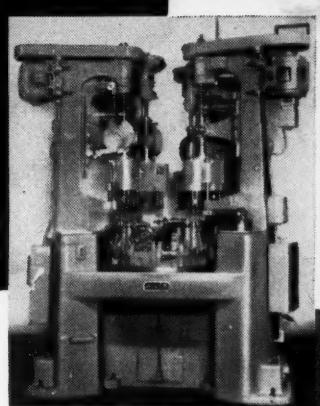
**Thompson**  
SURFACE  
Grinders

**Leading Drilling Machine Builders**

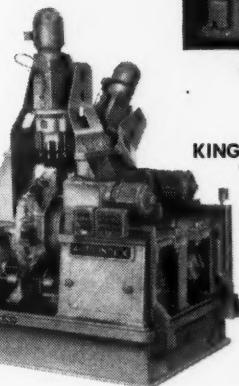
*rely Exclusively on*  
**U. S. DRILL HEADS**

**IT'S** Performance Data that counts.  
That's why engineers insist on U. S.  
Drill Heads.

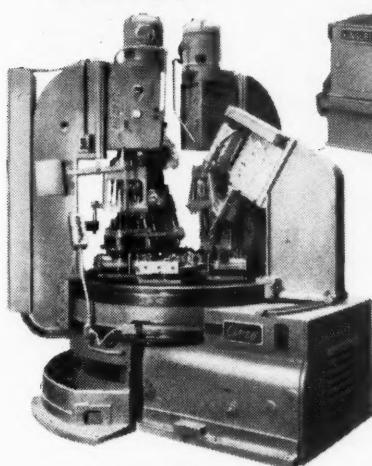
**Write**—or wire—today for latest  
catalog and full information on how  
we can help you.



CHAS. G. ALLEN CO.

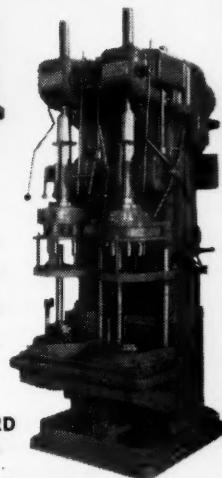


KINGSBURY MACHINE  
TOOL CORP.



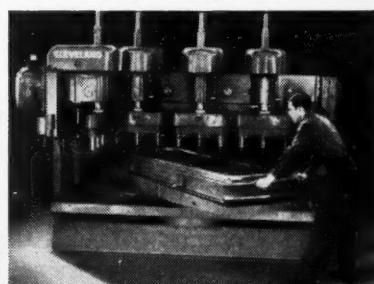
AVEY DRILLING MACHINE CO.

**WE** manufacture all types  
of multiple spindle, fixed  
center, adjustable and  
lead screw tapping heads.



CINCINNATI BICKFORD  
MACHINE TOOL CO.

CLEVELAND TAPPING  
MACHINE CO.



SINCE 1915

**UNITED STATES DRILL HEAD CO.**

CINCINNATI, OHIO

## HEVI DUTY FURNACES and HEPPENSTALL RESEARCH



In their interesting new brochure  
"Forging Ahead With Steel Through  
Research" the Heppenstall Company  
say in describing their new ultra-  
modern metallurgical laboratory

" - - superior research would be stimulated by superior equipment - - -".

Five Hevi Duty Pot Furnaces for constant temperature treatment of test  
samples are included in the heat treating equipment of this new laboratory.

Many manufacturers have standardized on Hevi Duty Furnaces of  
many types not only for production, but for pilot plant and other  
laboratory research use.

Pot Furnace details are in Bulletin HD-635 and HD-546. Send for them — today.

Five Hevi Duty Pot Furnaces in the  
new Heppenstall Laboratory,  
Pittsburgh.

**HEVI DUTY ELECTRIC COMPANY**

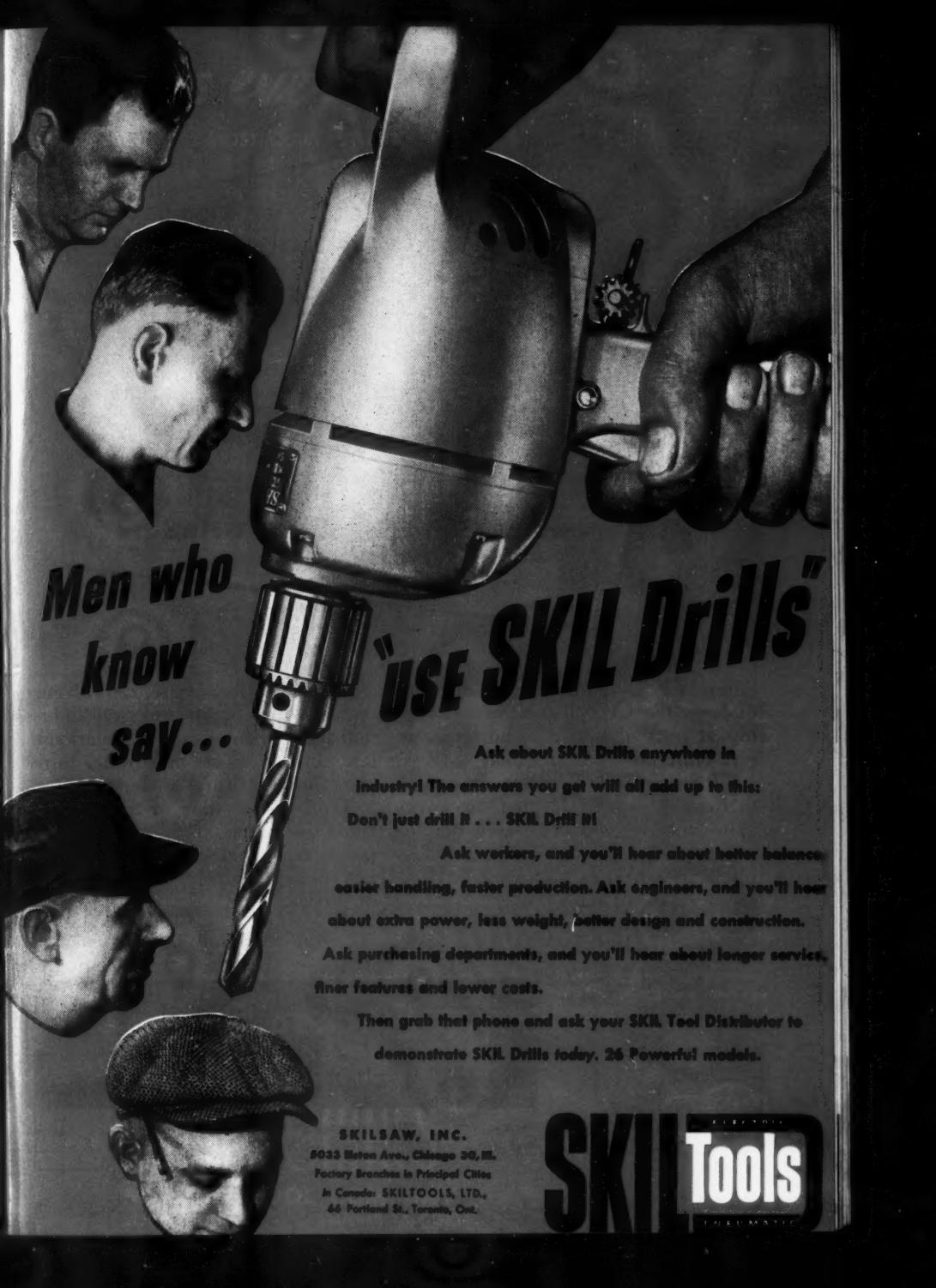
HEAT TREATING FURNACES

**HEVI DUTY**

ELECTRIC EXCLUSIVELY

DRY TYPE TRANSFORMERS — CONSTANT CURRENT REGULATORS

MILWAUKEE 1, WISCONSIN



*Men who  
know  
say...*

# "USE SKIL Drills"

Ask about SKIL Drills anywhere in industry! The answers you get will all add up to this:  
Don't just drill it . . . SKIL Drill It!

Ask workers, and you'll hear about better balance, easier handling, faster production. Ask engineers, and you'll hear about extra power, less weight, better design and construction. Ask purchasing departments, and you'll hear about longer service, finer features and lower costs.

Then grab that phone and ask your SKIL Tool Distributor to demonstrate SKIL Drills today. 26 Powerful models.

SKILSAW, INC.  
5033 Elston Ave., Chicago 30, Ill.  
Factory Branches in Principal Cities  
In Canada: SKILTOOLS, LTD.,  
66 Portland St., Toronto, Ont.

**SKIL** Tools



**Remove more metal  
at less cost**



**with CP Super Cycle Grinders**

Latest CP development in electric tools — the CP Super Cycle — has lowest ratio of weight to horsepower ever built into a portable tool.

CP Super Cycle Grinders are easier to handle, can be located on work more quickly, and are less tiring to hold. Speed does not sag when operator bears down, as tool works at full speed under all loads.

The 360-cycle, 3-phase, 220 volt current motor is of squirrel cage induction type. Maintenance is remarkably low, since there are no brushes to replace nor armatures to burn out.

The complete line of Super Cycle tools includes grinders, sanders, polishers, buffers, screw drivers, drills, nut runners, tappers, in a wide range of speeds.

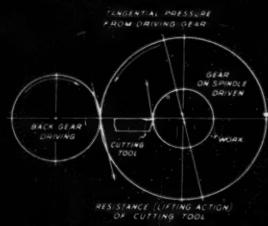
*Write for full information.*



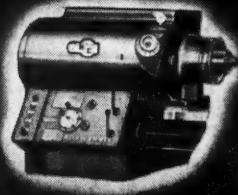
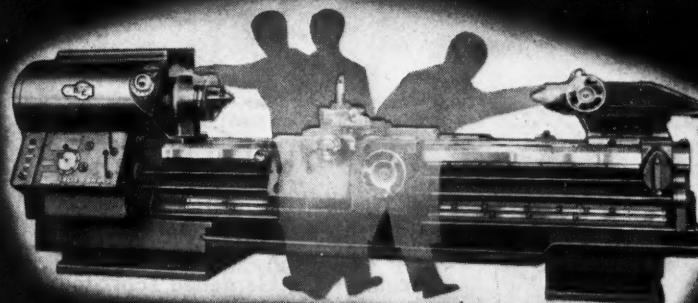
Electric Tools • Air Compressors • Pneumatic Tools • Diesel Engines  
Rock Drills • Hydraulic Tools • Vacuum Pumps • Aviation Accessories

# *It has everything*

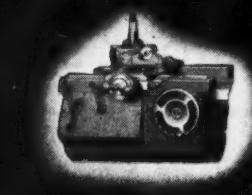
MOST QUIET, VISIBLE, ACCESSIBLE  
25 INCH LATHE EVER DESIGNED  
16 SPEEDS 7-500, AND 64 FEEDS



The down pressure of the back gear at the front (see diagram) counteracts the upward lift of the tool, eliminating chatter inherent in lathes which have a double lift on the spindle — by the tool on one side, and back gear on the opposite side.



Imagine! Speed and feed dials can be read by operator or foreman standing 15 feet to the left. Speed and feed tables are read without squat, squat, or stoop, and controls are more accessible because gear box has been sloped.



Sloped apron makes controls more accessible. Hand wheel is easier operated by right hand. Large dials are direct reading. Compound rest dial is mounted at an angle preventing interference with cross feed handle.



Tailstock slide adjusting handwheel travels with center and is in easy reach. When carriage is near center of bed all operating controls can be reached with a single step in either direction saving the operator lots of effort in a day's time.

# BOYÉ & EMMES

MACHINE TOOL COMPANY  
117 Caldwell Dr., Cincinnati 15, Ohio



You'll need this bulletin.  
Please write on your firm letterhead.

## YOUR FIRST and WISEST CHOICE

Eliminate fumbling and guessing when gaging Holes, Slots, Finding Centers, Locations, Etc.

Horberg Drill Size Pin Gages are accurate to  $\pm .0001$  — .0000.



FOR



### DEPENDABLE GAGING

• Overall Length  $1\frac{1}{2}$ " • Lower Half Concentric Tapered for Easy Insertion and Alignment for Holes down to .0012 smaller • Oil Hardened Tool Steel. No other pin gage has such accuracy at so low a cost.

INDIVIDUAL STOCK SIZES \$1.00 each

LETTER SETS: 52 gages from A to Z—\$45

FRACTION SETS: 60 gages  $\frac{3}{64}$ " to  $\frac{1}{2}$ " in steps of  $\frac{1}{64}$ "—\$50

NUMBER SETS: 120 gages 1 to 60—\$90

Sets come in pairs for gaging any number of similar holes. All sets include stands of 3 plates and cover, so that gages stand upright. Drill size is plainly stamped in front of each hole, together with decimal equivalent to the ten-thousandth of an inch.



Prices F.O.B. Bridgeport, Conn. Immediate Delivery.

THE *Horberg* GAGE COMPANY

19 STAPLES STREET, BRIDGEPORT, CONN.

# WORK *not* WEIGHT

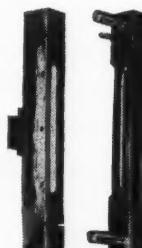
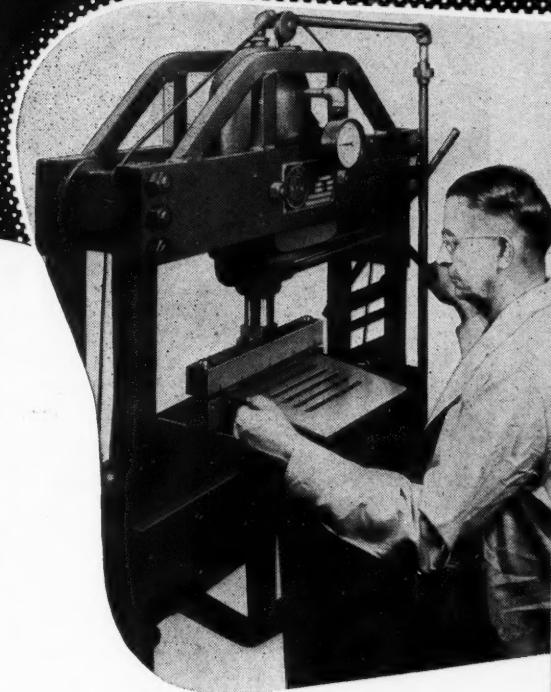
*Proves  
KRW Value*

• KRW Hydraulic Presses — either Hand operated, Air operated or Motor driven — are so flexible in design and operation, that a little ingenuity plus a few simple and inexpensive dies often result in tremendous time and cost savings.

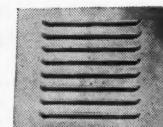
Gone is the old fashioned theory that most forming, blanking and stamping operations must be done on large, cumbersome presses. On the small run production job illustrated here, a farm machinery manufacturer was able to save considerably in both die and production costs by utilizing a standard KRW 75-ton press and low-cost dies as shown at the right.

Today, the term "arbor press" is a misnomer. In countless plants KRW Presses are doing thousands of jobs that, a few years ago, would have been done on larger equipment. KRW Hydraulic Presses are built in sizes varying from 25 to 100-ton capacities. All but the 100-ton press can be furnished as either hand operated, air operated or motor driven. Openings, bed widths, heights, etc. can be varied at very little extra cost to meet particular needs.

Before you buy a press, remember this truth — more often than not, "you don't need a sledgehammer to drive a tack." You can save plenty by bringing your production problem to KRW first. We're equipped engineeringwise to offer real help, no obligation of course.



## INEXPENSIVE DIES AND A KRW PRESS



Illustrated at the left are the low-cost dies used by John L. Bubb Farm Machinery Co. of Baldwinsville, N. Y. on their KRW Press to form louvers in 16 ga. sheet steel as shown at the right. 3 tons pressure is required to shear and 10 tons to form the louvre. This is a highly economical set-up for the limited production necessary.

K. R. WILSON, 215 Main St., Buffalo 3, N. Y.

16

Please send me complete information on KRW Arbor Presses   
100-ton Hydraulic Presses

Name ..... (Signature)

Address ..... (City) (State) (Zip)

**NAME YOUR NEEDS! MAIL COUPON!**

**K·R·WILSON**

PICK THIS  
BLADE

Eric Griffin<sup>22</sup>  
SPECIAL ALLOY

to Cut  
Production Costs

For longer service—often eight to ten times the life of ordinary tungsten steel blades—the GRIFFIN SPECIAL ALLOY power machine blade is your best buy. Molybdenum high speed steel, with strong, raker-set teeth. Made also in hand frame sizes.

### OTHER GRIFFIN BEST BUYS

For clean, accurate cutting of tough alloy steels, pick the GRIFFIN HIGH SPEED STEEL blade; 18-4-1 tungsten high speed steel; in power machine and hand frame sizes . . . For general hand frame use, pick the improved NEW GRIFFIN; flexible as a soft-back, tough as an all-hard . . . For sawing thin sheet or tubing by hand, pick the GRIFFIN NON-STRIP, with the teeth that don't break off . . . For precision contour sawing pick GRIFFIN BAND SAWS—choice of hard-edge flexible-back, spring-temper, skip-tooth and wood-cutting types.

Ask your distributor for Griffin Blades. For latest 20-page Griffin Price List, write us.

General Sales Agent

JOHN H. GRAHAM & CO., Inc.

Dept. D, 105 Duane St., New York 8, N. Y.

**•GRIFFIN•**  
HACK SAW BLADES and BAND SAWS

MADE BY G. W. GRIFFIN CO., FRANKLIN, N. H.  
Hack and Coping Saw Blade Specialists Since 1880

**NEW, TYPE-DX**

**HEAVY DUTY**

# Shoplifter

**Two Capacities**

**2000 lbs. and 1000 lbs.**

A larger, huskier version of the popular Type D 500 lb. Shoplifter, but retaining the easy handling features of the smaller lifter. Platform and base frame have an overall width of 24" that allows easy passage in narrow aisles, between presses, and through doorways. Hoisting unit is ball bearing equipped. Automatic friction-disc brake holds load at any point, not necessary to set or release pawl or brake device. Only 20 lbs. pressure is required on crank handle to raise or lower load. Extra heavy construction gives rigid stability that enables the operator to handle maximum loads with ease and smoothness. No other lifter of equal capacity on the market can match the Shoplifter for value. One user said: "It's a lot of machine for the money."

#### **SPECIFICATIONS**

**CAPACITY—1000 lbs. and 2000 lbs.**

**OVERALL HEIGHT (to clear)—6'8".**

**PLATFORM LIFT—54".**

**PLATFORM PLATE—24" wide x 27½" long (30" out from uprights).**

**BASEFRAME—24" wide x 50½" long overall. Open end front.**

**BASE WHEELS—5" fixed wheels, 6" swivel casters with push bar steer.**

**HOIST UNIT (two capacities)—Ball bearing equipped, crank up and down action, automatic safety brake holds load at whatever point raised. Drum scored for cable.**

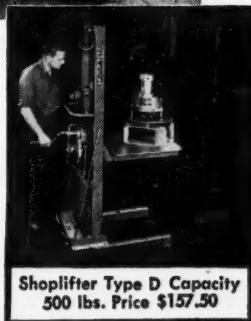
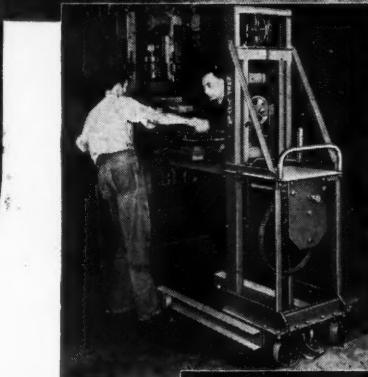
**PAINTED—Standard olive green finish.**

**PRICE—1000 lb. capacity.....\$320.00**

**2000 lb. capacity.....\$370.00**

**f.o.b. Chicago, freight prepaid to any destination in U.S.**

**Heavy duty foot operated floor lock.....\$15.00 Extra**



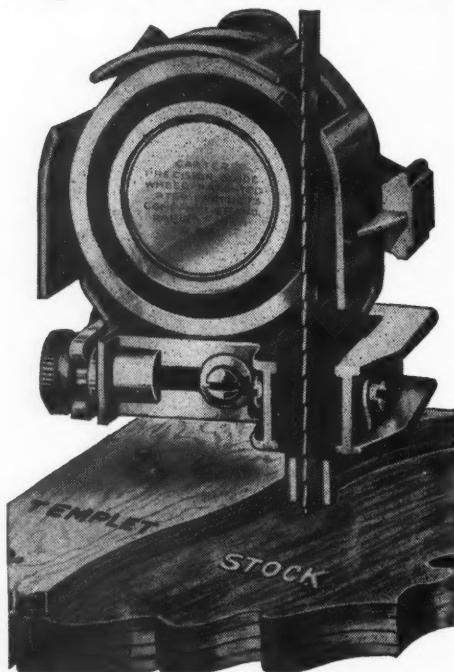
**Shoplifter Type D Capacity  
500 lbs. Price \$157.50**

**ECONOMY ENGINEERING CO.**

**4507 W. Lake Street, Chicago 24, Illinois**

# USERS Acclaim TEMPLATE PIN Feature of CARTER Micro-Precision GUIDE

Pays for Itself in Few Days Sawing Operations



Carter Micro-Precision Guides  
with Templet Pins

Carter Rigid Band Saw Wheels

Carter Quick Change Tires

**C A R T E R**  
**PRODUCTS COMPANY**

959 Michigan Trust Building  
Grand Rapids 2, Michigan

**Band Saw WHEELS • TIRES • GUIDES • GUIDE LIGHTS**

Thousands of CARTER Micro-Precision GUIDES with TEMPLET PINS have been shipped to bandsaw users throughout the United States and Canada since the introduction of this feature last Spring.

These users declare it is the finest Guide on the market today . . . that it saves thousands of dollars in time and materials . . . In fact, the CARTER GUIDE with TEMPLET PINS saves enough money to pay for itself in a few days sawing operations.

The addition of TEMPLET PINS to your CARTER Micro-Precision GUIDE enables your operator to saw more pieces per hour with increased accuracy, as costly and inaccurate marking of stock is eliminated . . . TEMPLET PINS also permit sawing of normal band saw sweeps.

## WRITE TODAY

You, like progressive Manufacturers across the continent, will be interested in the time and money saving features obtainable with CARTER Band Saw Equipment. We invite your requests for full details.

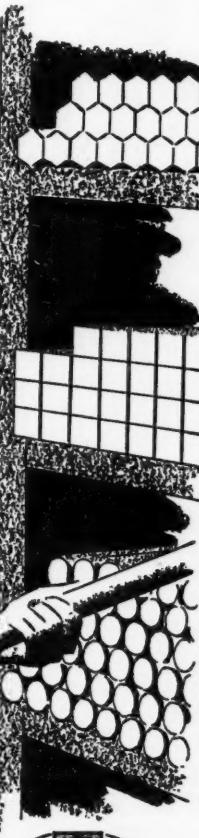
# YOUR NEIGHBORHOOD "steel bar store"

OFFERS YOU COMPLETE, DIVERSIFIED STOCKS  
OF COLD FINISHED STEEL BARS AND SHAFTING



Just make out your "shopping list" from your nearby Union Drawn Distributor's stocklist. Then call him on the phone and have him fill your order. It's as simple as that. No need to stockpile supplies or accumulate inventories top heavy with rarely-used sizes. Use your distributor's warehouse as your stockroom—and save the expense of operating your own.

"We deliver—but FAST" could be a motto adopted by this "store." Large orders, small orders get immediate attention. They're on their way to you within minutes of your call. Keep your Union Drawn Distributor's phone number handy . . . and always call him FIRST.



Republic UNION  
COLD DRAWN STEELS

# LAW of GRAVITY Suspended . . . .



**GISHOLT**  
**Turn Mill Slides**  
**COUNTER-BALANCED**  
by  
**NOPAK**  
**AIR**  
**CYLINDERS**

GISHOLT Model TMP-6 Crank-Shaft Turn Mill equipped with four 10" NOPAK Air Cylinders which suspend heavy cutter-slides in a column of air.

The Crank-Shaft Turn Mill pictured has two vertical columns, each of which carries 2 cutter slides, one upper, and one lower.

Each slide weighs about 550 pounds and has its own counter-balancing 10" NOPAK Air Cylinder located at the top of the vertical column. There is a constant and continuous air pressure on these cylinders, and no valves of any kind are used. As these slides are counter-balanced by air, they have no gravitational weight. Their feed-movement is controlled by hydraulic cylinders.

This unique application is one of several which Gisholt has found for NOPAK Cylinders or Valves in building its line of Machine Tools. You can use them to advantage in your product . . . or in your plant.

**GALLAND-HENNING MFG. CO., 2758 South 31st St., Milwaukee 7, Wisconsin**

**WRITE FOR NOPAK  
APPLICATION MANUAL**

**REPRESENTATIVES  
IN PRINCIPAL CITIES**

**NOPAK**  
**VALVES AND CYLINDERS**  
**DESIGNED for AIR and HYDRAULIC SERVICE**  
A 5464-1/2I-A



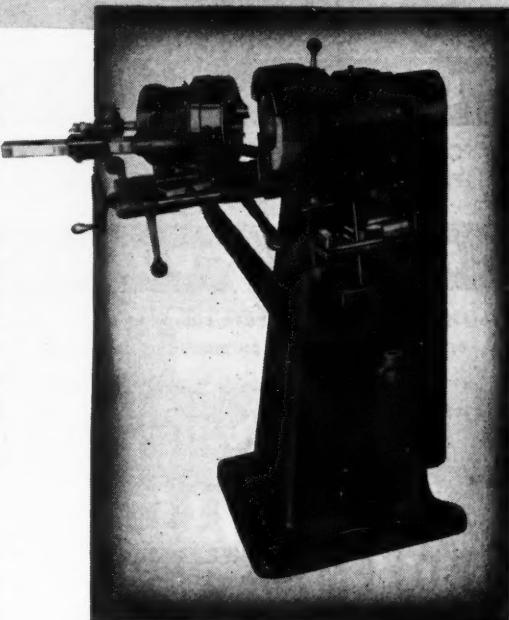
For the Only Theoretically  
Correct Point—Use the

## OLIVER "510" DRILL POINTER

The point form produced on the OLIVER Drill Pointer has been judged by competent authorities to be "theoretically correct, and practically perfect."

OLIVER pointed drills show a gradually increasing clearance toward the center of the drill, with less chisel point angle, reducing thrust. To you, this means more holes drilled between grinds, longer overall drill life, and uniformly ground points. (This can best be tested on multiple spindle drilling operations, where all points must drill alike.)

The OLIVER "510" will grind all drills from  $\frac{1}{4}$ " to 3", with the proper point angle and clearance for your job. The operation is automatic—produces drills that last longer than those sharpened by hand.



Send us a few drills to sharpen without cost. You can see the improvement—test them on your own job.

WRITE TODAY FOR "510" CATALOG

THE OLIVER INSTRUMENT CO.  
1430 E. Maumee St., Adrian, Mich.



AUTOMATIC DRILL GRINDERS  
TOOL & CUTTER GRINDERS—DRILL  
POINT THINNERS—TEMPLATE  
TOOL GRINDERS—FACE MILL  
GRINDERS—DIEMAKING MACHINES

## FEWER WHEELS

With grinding wheels approaching 50% of the total cost to grind high speed tool steel, plant installed a Hoffman Flotation System, to serve 4 grinders.

Result: 88 grinding wheels saved yearly

→ \$8960.00

## LESS OIL

Coolant saved by clarification in the Hoffman Flotation System amounted to 600 gallons in first year.

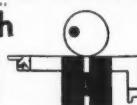
→ 216.00

## MORE PRODUCTION

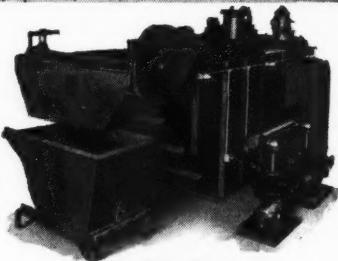
Operators no longer have sumps to clean—they stay on production. Saved on manhours for sump cleaning.

→ 204.00

Total Savings for 1 year \$9380.00

All yours with  
**HOFFMAN**   
FLOTATION EQUIPMENT for  
Automatic coolant clarification

Convert "down" time into production time. And get savings on coolant, wheels and maintenance more than enough to pay back your investment. That, in very brief, is the story on the HOFFMAN Flotation System for coolant clarification. To get the complete details,



Models from  
20 to 1,000 g.p.m.

Visit Booth No. 838, National Metal Exposition, Philadelphia, Oct. 25-29

# U. S. HOFFMAN

COOLANT FILTERS • FILTRATION ENGINEERING SERVICE

MACHINERY  
CORPORATION  
213 Lamson St., Syracuse 6, N.Y.

MACHINES LIKE THIS  
ARE WINNING THE  
BATTLE OF COSTS

with

# CUSHMAN POWER CHUCKS

AN ESSENTIAL PART OF THEIR  
SPECIAL EQUIPMENT

Yes, this is a typical example of how an every-day product (iron conduit connectors), that has to be made economically, now "rides the merry-go-round" on a single five-station automatic machine. Previously it passed from hand to hand through successive individual operations.

Certainly it has been done many times before . . . and always with spectacular time and cost savings. But this application is a

*A World Standard for Precision*

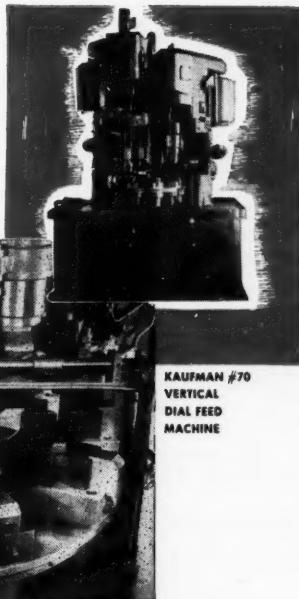
little different in that the parts are larger, the machinery loads comparatively heavy, consequently requiring Cushman Power Operated 2-Jaw Chucks of specially adapted design, hardened all over to assure maximum wear and maintained high accuracy under constant duty conditions. Each chuck is actuated by its own individual oil cylinder below the table. Operations include hollow milling OD, reaming ID and threading malleable iron conduit connectors in varying sizes up to 2" diameter.

Cushman Engineers will be glad to work with you on similar applications. Our data files are a mine of useful ideas on tooling for economical quantity production.

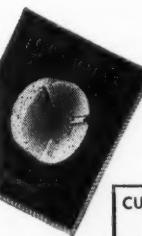
Write for Catalog PO63

THE CUSHMAN CHUCK COMPANY  
HARTFORD 2, CONNECTICUT

October, 1948



KAUFMAN #70  
VERTICAL  
DIAL FEED  
MACHINE



CUSHMAN also manufactures  
a complete series of  
WRENCH OPERATED CHUCKS

Write for Catalog 63 and Bulletins

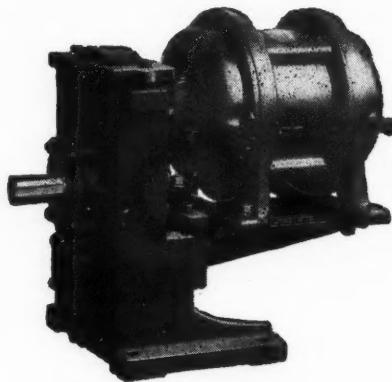
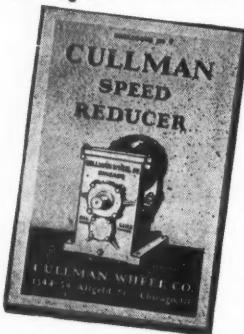
# HERE'S HOW...

TO GET MORE PRODUCTION  
FROM EXISTING MACHINES

## CULLMAN *Speed* REDUCERS

ADAPT ELECTRIC MOTORS TO SLOWER OPERATIONS

New Low-speed Range  
For Motors  $\frac{1}{4}$  To 15 h. p.  
Fit Speeds To Job Needs



WRITE FOR YOUR COPY...  
Get the facts! Ask for this  
helpful booklet which con-  
tains much useful data and  
facts for buyers. It de-  
scribes Cullman Speed  
Reducers and other Cull-  
man products.

Any standard electric motor can be adapted for many new uses by adding a Cullman Speed Reducer. Compact, dependable, efficient—Cullman Speed Reducers are made in single and double reduction types. Cullman units are equipped with Helical Gears, Roller Bearings, Sprockets and Roller Chains all operating in oil. *Installation is simplified by convenient motor mountings.*

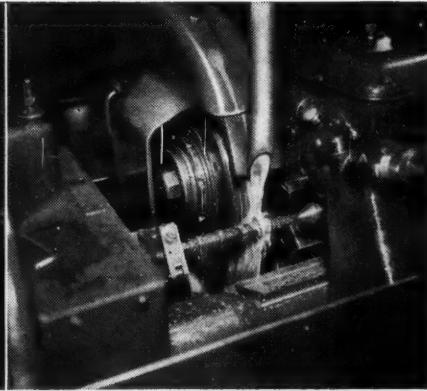
**CULLMAN WHEEL COMPANY**

1352 V. Altgeld Street

Chicago 14, Illinois



Cities Service cutting oil specialists have helped make turret lathe production more profitable for many of our customers.



In cam lobes grinding as in other grinding operations Cities Service Soluble fluids make fine finish possible with fewer rejects.

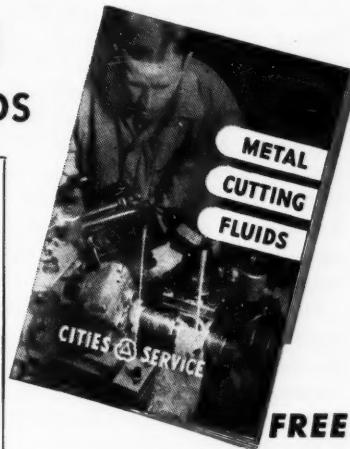
## FIVE REASONS FOR SPECIFYING **CITIES SERVICE** QUALITY CUTTING FLUIDS

Experienced users of cutting fluids generally agree that with correct tooling and the right type of cutting fluid they can usually count on the following gains:

- ★ Longer tool life
- ★ Better finish
- ★ Closer tolerances, greater accuracies
- ★ Higher speeds per machine or operation
- ★ Produce more pieces between tool regrinds

Why not find out what the right type cutting fluid will do for you?

Just Mail This Coupon ▶



CITIES SERVICE OIL COMPANY  
SIXTY WALL TOWER  
Room 230  
NEW YORK 5, N. Y.

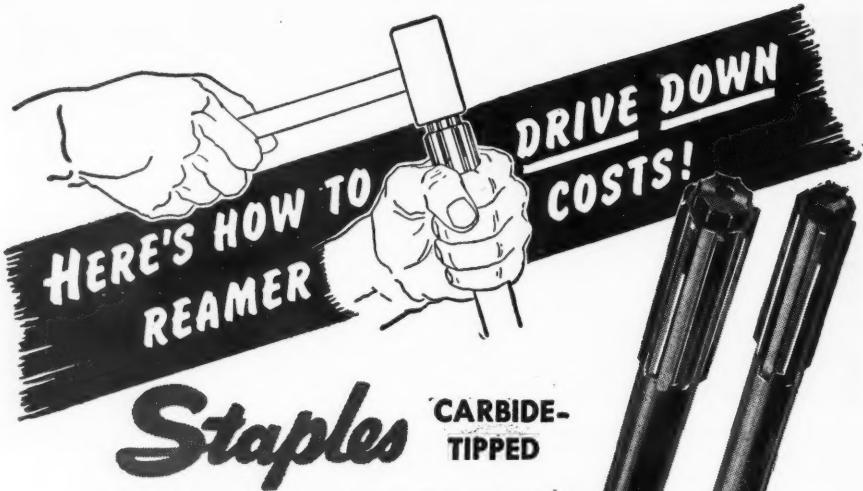
Please send me without obligation your new booklet entitled "Metal Cutting Fluids."

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

**CITIES  SERVICE**  
QUALITY PETROLEUM PRODUCTS



## Staples CARBIDE-TIPPED EXPANSION REAMERS

The only expansion reamer with a solid tool body—not split—which provides rigidity and accuracy not obtained in conventional types.

To compensate for tool wear, simply drive in the tapered plug, and expand tool back to original diameter. Plug causes the arcs of the body between the cutting blades to flatten, tilts the tips back, and automatically increases the clearance angle. Expansion plug contacts tool body well beyond rear of tips, assuring uniform parallel expansion the full tip length. Cutting blades remain perfectly concentric.

Range of expansion is from .004" to .020", depending on tool size and number of flutes. Plug has taper of .020" per inch, permitting easy adjustment of tool to .0001". Staples Expansion Reamers can be expanded several times without a regrind, and without affecting hole finish.

*Put these standard tools into your production now—watch your reamer costs go down on highly accurate hole finishing operations.*

THE STAPLES TOOL CO., CINCINNATI 25, OHIO • DISTRIBUTORS IN MAJOR CITIES



**STANDARD STAPLES EXPANSION REAMERS SOFT SHANK AND FLUTES**  
—For drill press, lathe and screw machine applications where guide bushings are not used.

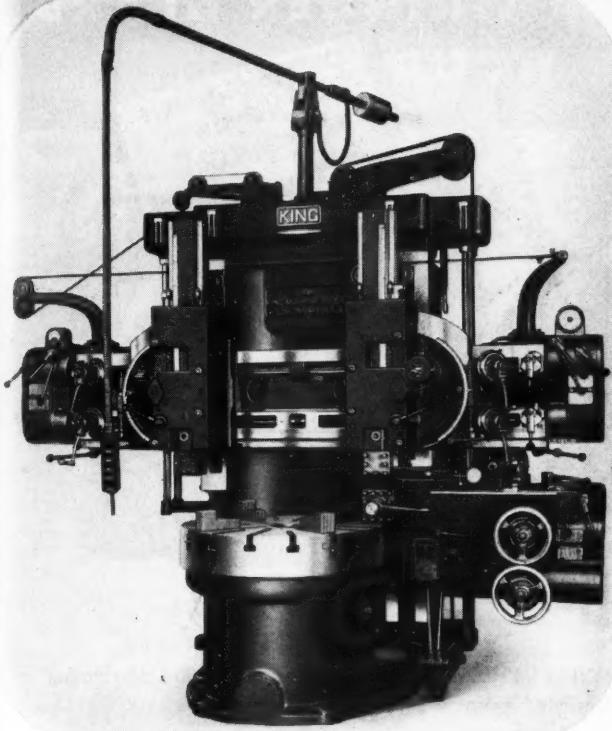
**HARDENED SHANK AND FLUTES**  
—For all types of reaming through guide bushings.

**Straight Flutes — Straight and Taper Shanks from  $\frac{1}{4}$ " to  $1\frac{1}{2}$ " diameter.**

**Staples CARBIDE-TIPPED CUTTING TOOLS**

A COMPLETE LINE OF SINGLE AND MULTIPLE POINT CUTTING TOOLS  
EXPANSION REAMERS • FORM TOOLS • CENTERS • MASONRY DRILLS • SPECIAL TOOLS

**THERE'S A REASON WHY**  
*The New Series* **KING**



- meets close tolerances
- maintains accuracy
- reduces costs

The New Series KING Vertical Boring and Turning Machine is easy to operate.

For example, angular hand adjustment levers with micrometer dials for vertical and horizontal movement of the head are an integral part of the head and move with it. They enable the operator to make precision adjustments easily and quickly from his normal working position.

The massive rectangular type ram heads . . . the ram heads square locked and

fitted with four tapered gibbs for accurate adjustment . . . the heavy tie plate across the swivel . . . all assure high and consistent accuracy.

These features plus full range of feeds and speeds make possible maximum production at exceptionally low costs.

Consult a King Engineer on your precision turning, boring, facing, taper turning, and similar operations.

Ten sizes available, from 30" to 144"

**American Steel Foundries**

**KING MACHINE TOOL DIVISION**

CINCINNATI 29, OHIO

# *Blind Operator . . .*

## HONES 183 WRINGER GEARS PER HOUR



346

... at The Maytag Co.  
Newton, Iowa

THREE TIMES EVERY MINUTE each operator takes a completed wringer gear off the mandrel of a Sunnen Honing Machine. The internal diameter of this case hardened gear is honed to a smooth finish: straight, round and accurate.

At Maytag five other parts are production honed to produce smooth, accurate internal diameters; to remove heat-treat distortion; to remove burrs — and

to lengthen the service life of rotating parts.

When you use Sunnen Honing, set-up time is fast, less than 5 minutes. Skilled labor is unnecessary. Operators, even girls, can be trained in an hour or less.

If your specifications call for finishing of internal diameters from .120" to 2.625"—accuracy to .0001", extremely smooth finish, it will pay you to investigate Sunnen Honing.

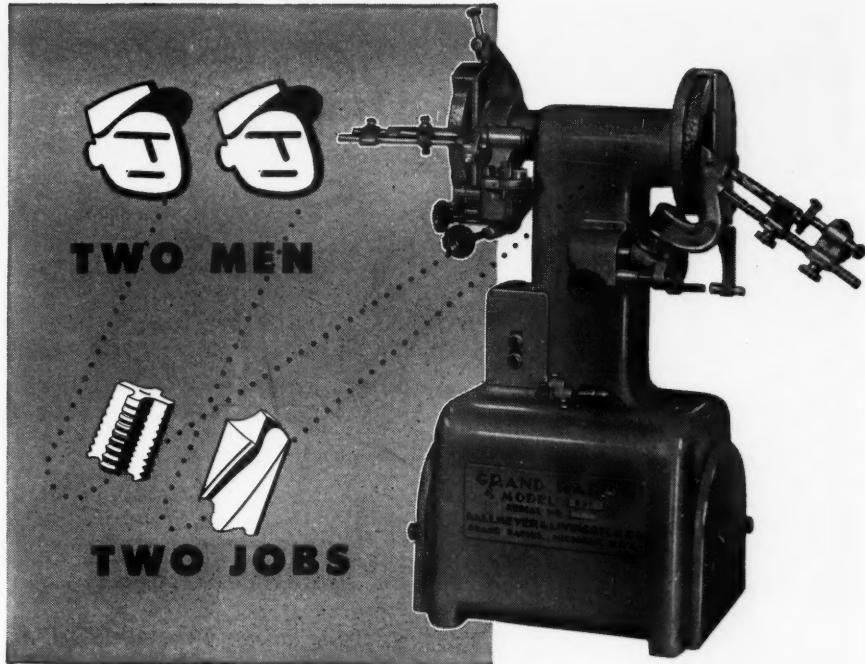
Write for booklet XSP-5, or, on request, a Sunnen engineer will call at your plant.



SUNNEN PRODUCTS COMPANY

7976 MANCHESTER AVE., ST. LOUIS 17, MO.

Canadian Factory: Chatham, Ontario



## ONE MACHINE

● Working simultaneously, these men save time, floor space and maintenance costs in your tool room. Providing them with the facilities of two single-purpose machines, the Grand Rapids Tap and Drill Grinder accurately sharpens worn taps and drills to the correct cutting and clearance angles required for precision work. The rigid spindle is ruggedly built to resist heavy combined radial and thrust loads, and large wheel guards and flanges insure maximum safety. Grinding surfaces are dressed by a new, diamond truing device. The long life of this machine is assured by Grand Rapids' widely recognized reputation for sturdy, heavy-duty construction.

*To serve you — Your inquiry concerning your specific grinding needs will receive prompt attention.*

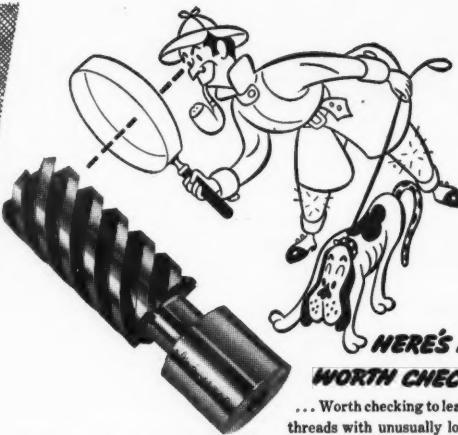
*Grand Rapids Grinders include: Hydraulic Feed Surface Grinders, Universal Cutter Grinders, Hand Feed Surface Grinders, and Combination Tap and Drill Grinders.*



### *GRAND RAPIDS GRINDERS*

308 STRAIGHT AVE., S.W., GRAND RAPIDS 4, MICHIGAN

7

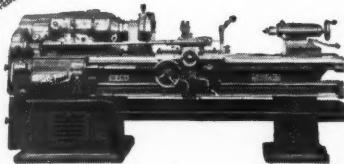


**HERE'S A LEAD  
WORTH CHECKING.. .**

... Worth checking to learn how easily threads with unusually long leads can

be produced on the Hendey 16 x 54 lathe equipped with a Sub-Headstock. The six start worm shown above has a major diameter of 1-5/8" and a lead of 4". Producing a thread with such a long lead can impose severe strains on a lathe. Frequently, tolerances cannot be met. The Hendey lathe with Sub-Headstock avoids these problems by a unique gear arrangement. The Sub-Headstock driving plate revolves one turn to six turns of the lathe spindle. This reduces the load on the lathe to allow the chasing of threads with leads beyond the range given on the index plate.

Better check today on Hendey Precision lathes. They are manufactured in a wide range of sizes and capacities to suit every tool room use. Features include hardened and ground ways, preloaded roller bearing mounted spindles, precision lead screws and automatic lubrication. Write today for complete information.



HENDEY 16-SPEED 16 x 54 PRECISION LATHE

Other Hendey Machines Include  
Tool Room Lathes — 9", 12", 14", 16", 18", 20", 24"  
Shapers — 12", 16", 20", 24", 28"

THE **hendey** MACHINE COMPANY

MAIN OFFICE & PLANT: TORRINGTON, CONN.  
BRANCH OFFICES: New York, Chicago, Boston, Detroit,  
Rochester, Los Angeles, San Francisco  
REPRESENTATIVES: Philadelphia, Cleveland, Pittsburgh

**hendey**

# Rouselle Scores Again!

the  
**NEW 2G**  
**15-TON**  
**ROUSSELLE**  
**PUNCH**  
**PRESS**  
With the



## ANOTHER OUTSTANDING PRESS ADDED TO THE FAMOUS ROUSSELLE LINE

**HIGH PRODUCTION • LOW COST • DEPENDABLE**

Ideal for sheet metal and fabricating shops. Punches to center of 36" sheets. Adaptable to trimming plastics, die castings and regular

punch press operations.  
Other Presses: 5 - 10 - 15 - 25 ton  
O.B.I. 15-25 ton horning with adjustable bed.

SEE  
YOUR  
LOCAL  
DEALER

**R**OUSSELLE  
**SERVICE MACHINE CO.**

422 S. ASHLAND AVE., CHICAGO 20, ILL.

OR  
WRITE  
DIRECTLY  
TO DEPT. AA

# L-W SWIVEL BASE MILLING MACHINE VISES

**MASTER \$42.25**

Jaws: 6½" wide, 2" deep.  
Opens 4" with jaws, 5¼" without.  
Wt. complete with crank, boxed, 85 lb.

**JUNIOR \$31.45**

Jaws: 4½" wide, 1¾" deep.  
Opens 3" with jaws, 3½" without.  
Wt. complete with crank, boxed, 35 lb.

**HUSKY 3" \$18.80**

Jaws: 3" wide, 1" deep.  
Opens 2" with jaws.  
Wt. complete with crank, 16 lb.



**STEEL JAWS**  
Suited to drill press and shaper work.

**GRADUATED BASE**

Can be used plain or swivel.

**LARGE ACME STEEL SCREW**

Contributes sturdiness and durability.

**FOUR BOLT AND KEY SLOTS**

are provided for rigidly attaching to  
machine table so that work holding  
surfaces are at true right angles  
or parallel to table.



Send for complete catalog giving prices and specifications on these quality, low-cost L-W Products



DIVIDING HEADS



MAGNETIC CHUCKS



RECTIFIERS



DEMAGNETIZING SWITCHES



LATHE CHUCKS



UNIVERSAL CHUCKS



POWER MITER SAW



MILLING MACHINE VISSES

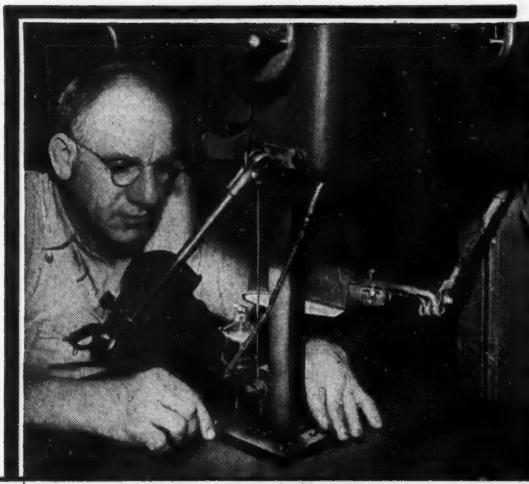
**L-W CHUCK COMPANY**

28 SO. ST. CLAIR ST.  
TOLEDO 4, OHIO

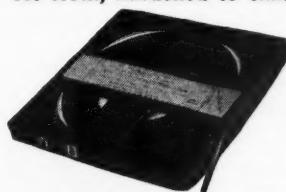
# *Specify* ATLANTIC BAND SAW BLADES

*for  
Smoother*

## CONTOUR CUTTING



ATLANTIC SAWS meet all of your requirements for a superior blade on complicated die and fixture radius cutting. ATLANTIC specializes in accurate milled and precision set teeth, hardened to exact temper.



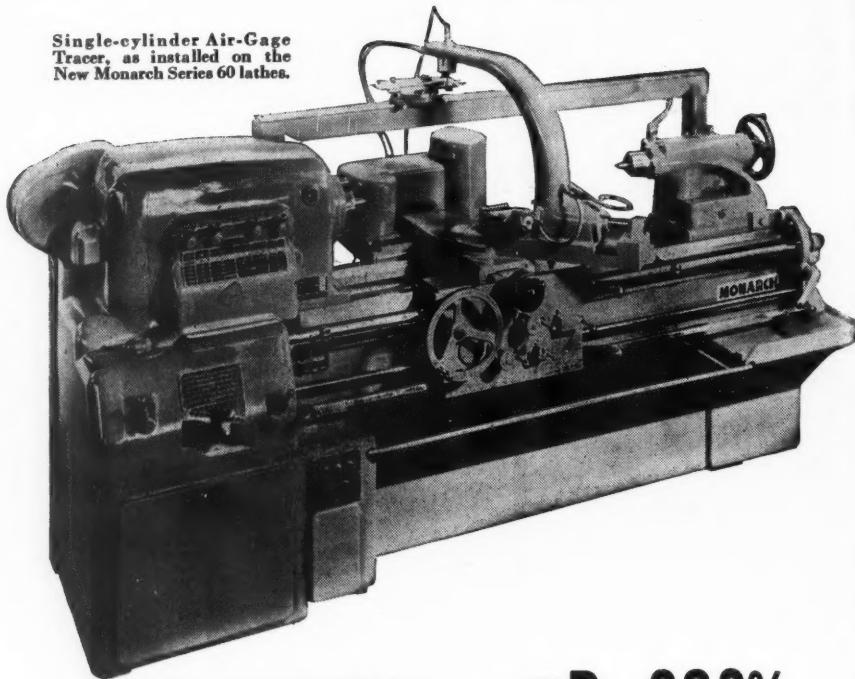
Atlantic's strong, practical box, plainly marked on sides and top. Remains in good condition until entire coil is used.

ATLANTIC'S special alloy steel insures longer wear and easier welding. ATLANTIC'S one temper saw for all metals reduces stock you have to carry. Cut to length and welded, ready for use. Packed in strong Atlantic box. Write for new Atlantic Catalog.

*Atlantic Saw Mfg. Co.  
INCORPORATED*

Exclusively Manufacturers of Band Saw Blades  
155 Brewery St., New Haven, Conn.

Single-cylinder Air-Gage  
Tracer, as installed on the  
New Monarch Series 60 lathes.



## SHAFT PRODUCTION UPPED 362%

With the New Monarch Air-Gage Tracer

*Production time was cut from 174 hours down to 48 hours—for a large and representative lot of shafts.*

This manufacturer's savings in time through the use of the Air-Gage Tracer is typical—as are the other savings made in this installation. Here's the story:

Shafts ranging in diameter from 3" to 4½" had been turned on modern manually-operated lathes, leaving .015" to .020" of stock for the grinding operation. Air-Gage Tracing holds diameter so closely (.002" on the average) that the stock left for grinding was cut in half. Grinder

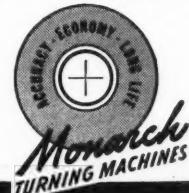
costs decreased, too.

Here's the payoff. Two Air-Gage Tracer equipped machines replaced five manual machines for this manufacturer—and they're out-performing the original battery, with more production—of far higher quality.

Let us show you how these modern Monarch Air-Gage Tracer equipped machines can cut your costs on shaft work and turned or bored contours and tapers.

THE MONARCH MACHINE TOOL COMPANY • Sidney, Ohio

FOR A GOOD TURN FASTER — TURN TO MONARCH



# New Sole Supplier!



## Johansson Gage Blocks

now made for all Western Hemisphere  
by Brown & Sharpe

With the recent purchase of the Johansson Division from Ford Motor Company, Brown & Sharpe acquired all rights to manufacture and distribute Johansson Gage Blocks and Accessories throughout the Western Hemisphere.

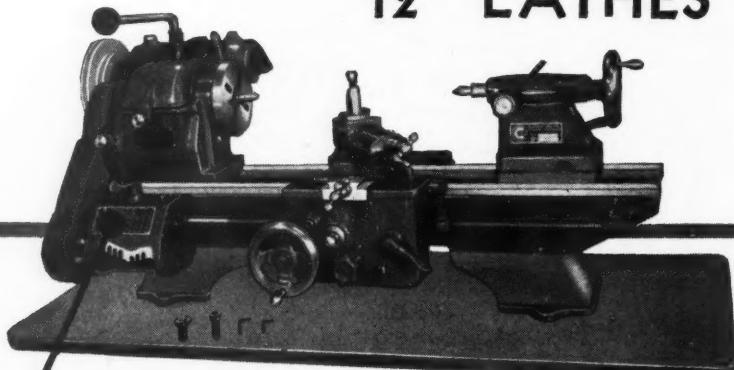
Thus, industry is assured a continuing, dependable source of supply for Johansson products of the same unprecedented precision that has made them the worldwide measuring standard in mass production of interchangeable parts. Brown & Sharpe Mfg. Co., Providence 1, R. I., U. S. A.

*We urge buying through the Distributor*

BROWN & SHARPE NBS

# Clausing

## DUAL QUICK CHANGE 12" LATHES



### 48 THREADS AND POWER FEEDS AT YOUR FINGERTIPS

#### ADDITIONAL

#### Clausing

#### FEATURES

- Precision ground bed with two flat and two vee ways
- Adjustable Timken tapered roller bearing headstock
- Ball bearing friction clutch countershaft
- Nine spindle speeds from 33 to 2400 r.p.m.
- Hooded V-belt drive
- Automatic apron

Designed for wide range performance and utmost ease of operation. The Clausing Dual Quick Change 12" Lathe gives instant selection of 48 threads and feeds . . . simply by shifting two levers. Gives finer feeds instantly without stopping lathe. Saves set-up time and operating time on any turning operation requiring power feed. Easy-to-read chart shows lever and gear positions. The Synchronized Gear Box is of "big machine" design and construction. Liberal use of precision ball bearings on which shafts turn readily, with a minimum of friction. Gears are machine cut,  $\frac{1}{8}$ " wide for greater strength and longer life. Compare the Clausing Quick Change with lathes in this price range.

For smooth, accurate performance, greater convenience and lasting satisfaction investigate Clausing Lathes today.



Since 1871

**CLAUSING MANUFACTURING CO.**

229 RICHMOND AVE.

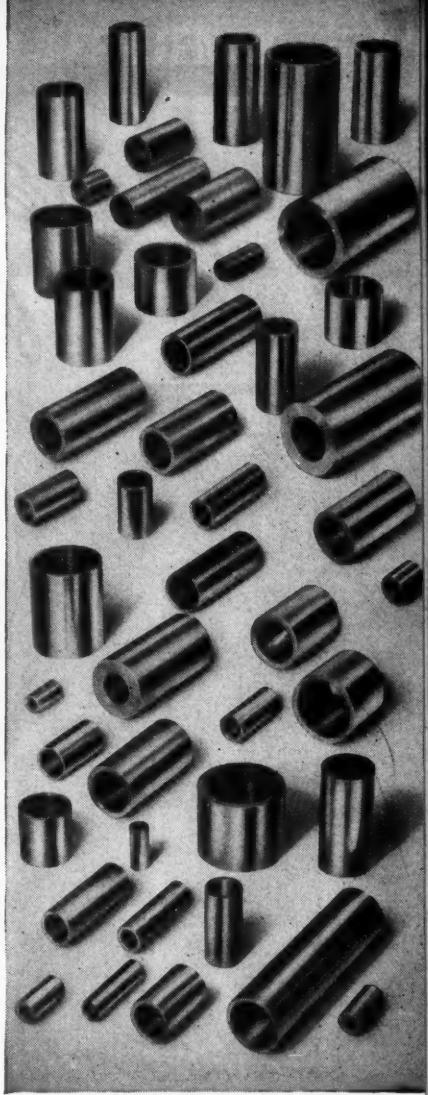
OTTUMWA, IOWA

1088 SIZES OF FULLY  
FINISHED, READY-TO-USE

# BUCKEYE BEARINGS

CARRIED BY LEADING DISTRIBUTORS  
FOR YOUR CONVENIENCE

● Leading supply houses carry Buckeye Bearings to serve you better. Manufactured from selected materials under our rigid controls, Buckeye Bearings meet the most exacting specifications. Each is a quality product—free from porosity and accurately dimensioned within the required limits assuring speedy, easy assembly and a maximum of long, efficient, satisfactory service. Send for the Buckeye catalog, and order Buckeye quality bearings—by name and number—from your Buckeye distributor.



*Buckeye*  
BRASS AND MANUFACTURING COMPANY  
BRONZESMITHS  
6412 HAWTHORNE AVE. SINCE 1900 CLEVELAND 3, OHIO

BRONZE SLEEVE BEARINGS • STANDARD SIZES OR TO CUSTOMERS' BLUEPRINT

# Mark It for Market



Modern Marking Machines now enable most manufacturers of metal components to identify their products at trifling cost.

**TRADE MARKS—  
MANUFACTURERS—  
PART NUMBERS—  
PERMANENTLY ROLLED  
ON YOUR PRODUCTS  
WILL HELP YOU MARKET  
THEM.**

Send prints of parts, showing required marking and its location on part with hourly production for free recommendation.

*Illustrated at the left is  
Model 135 Production  
Marking Machine.*

**WRITE FOR CATALOG**



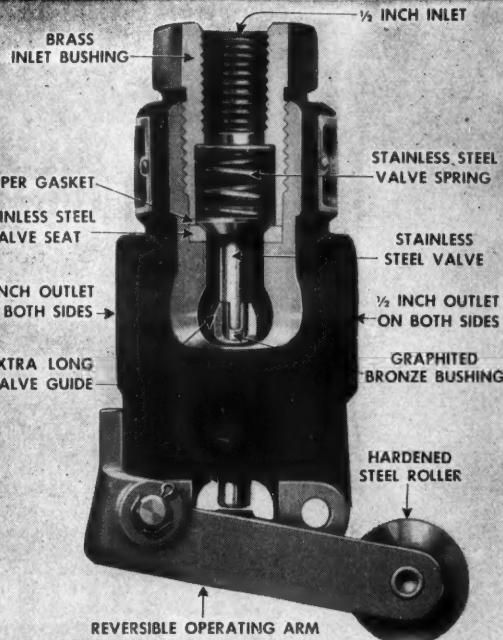
**GEO.T. SCHMIDT, INC.**

**1806 W. BELLE PLAINE AVE.  
CHICAGO • 13 • ILLINOIS**

**INCREASE MACHINE TOOL EFFICIENCY with**

*Palmer-Shile* AIR SAVER

# AIR VALVE



★  
OPERATORS

★  
Install  
AIR-SAVER  
AIR VALVES  
on machines  
you now  
operate

★  
MANUFACTURERS

★  
Build  
AIR-SAVER  
AIR VALVES  
into your new  
machines for  
maximum efficiency

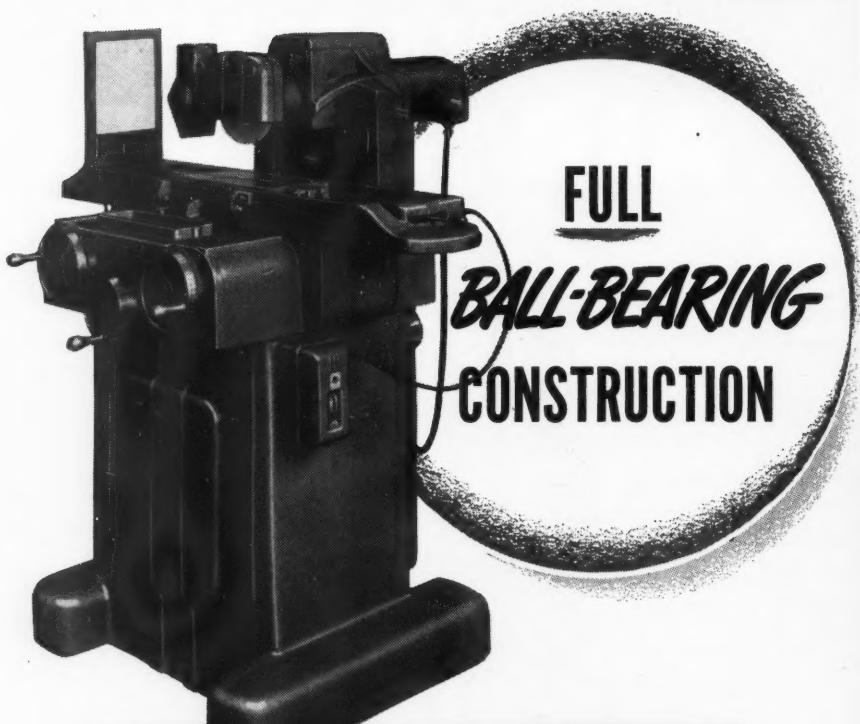
A real precision-built, leak-proof air valve that completely harnesses air power and assures split-second air control at all times. The easy-to-install Air Saver mounts in any position—operates at any angle—unaffected by vibration—provides ample air volume for operation of single or multiple jets. A natural where air is used for cleaning, drying, cooling, positioning or ejecting. Especially recommended around punch presses, die casting machinery, drill presses—and in reaming, broaching and other operations. *Immediate Delivery.*

50975 (Valve Alone) \$12.00

30801  
Complete Assembly  
Includes Valve,  
Mounting Rods,  
Operating Cam.

\$15.00

*Palmer-Shile Co.*  
16022 FULLERTON AVE. • DETROIT 27, MICH.



FULL  
**BALL-BEARING  
CONSTRUCTION**

*Gives this* **TAFT-PEIRCE**  
**NO. 1 PRECISION SURFACE GRINDER**  
Effortless Operation • Unusual Accuracy

The operation of this Taft-Peirce No. 1 Precision Surface Grinder is smooth and effortless because table, saddle and column travel on ball bearings retained in vees of hardened and ground alloy steel.

As a result there is practically no wear on ways and moving parts. Grinding time and wheel wear are sharply reduced. Plane surfaces can be given the highest

possible degree of accuracy, flatness and finish.

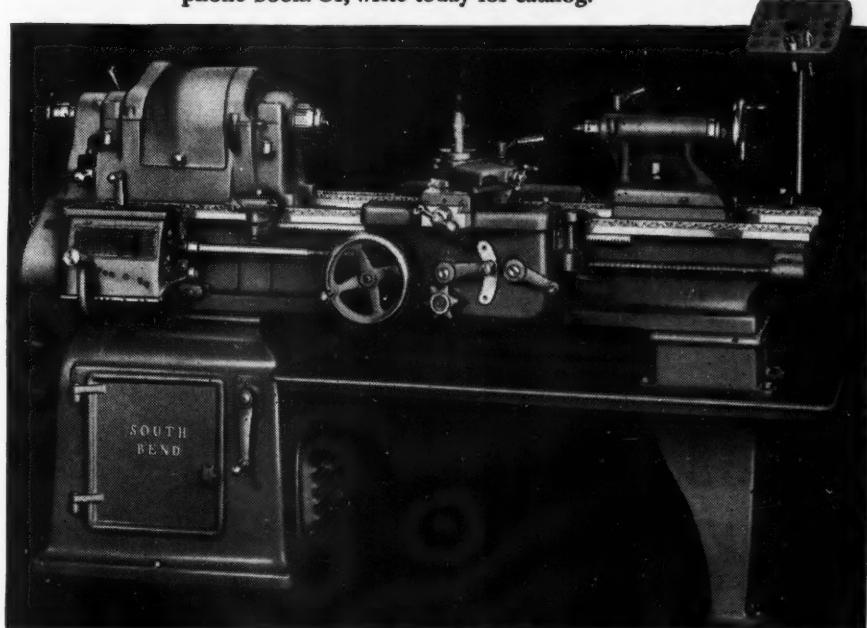
This and other exclusive features will measurably improve the output, quality and economy of your surface grinding work on parts up to 5" x 12" x 12". For illustrated booklet and prices write: The Taft-Peirce Mfg. Co., Woonsocket, Rhode Island.



**THE TAFT-PEIRCE MFG. CO.**  
WOONSOCKET, RHODE ISLAND

**SOUTH BEND PRECISION LATHES** have solved the production of precision parts for many manufacturers. Their accuracy, speed and adaptability to a wide range of operations contribute to efficient machining. Perhaps you are running some small, precision jobs on slow, heavy machines. If so, find out about South Bend Precision Lathes. These are the kind of jobs for which they are built. Their use can often effect appreciable savings. And, being reasonable in price, they can be installed without excessive capital investment.

Call our local distributor for information. His name is listed under "Machine Tools" or "Lathes" in your classified phone book. Or, write today for catalog.



**16" x 6" TOOLROOM LATHE** with handwheel collet attachment; collet rack; taper attachment; micrometer carriage stop; chip pan; thread dial; 3 phase, 60 cycle, \$2145.25  
220 volt motor; and drum switch. Catalog No. 8117-C.

#### PRICES OF SOUTH BEND LATHES

LATHE SIZE	QUICK CHANGE GEAR MODEL	TOOLROOM MODEL
16" x 6" Lathe	\$1729.25	\$2145.25
14½" x 5" Lathe	1466.25	1843.25
13" x 5" Lathe	1227.25	1577.25
10" x 3" Lathe	924.35	1231.35
9" x 3" Bench Lathe	335.45	516.45

Prices include 3 ph., 60 cy., A.C. motor and drum switch — f.o.b. factory



**SOUTH BEND LATHE WORKS**

BUILDING BETTER TOOLS SINCE 1906

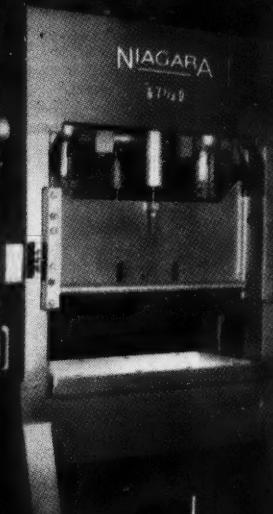
427 EAST MADISON STREET, SOUTH BEND 22, INDIANA

# NIAGARA

## PRESSES, SHEARS, TINNERS TOOLS *for* S



Niagara  
Double Crank Press



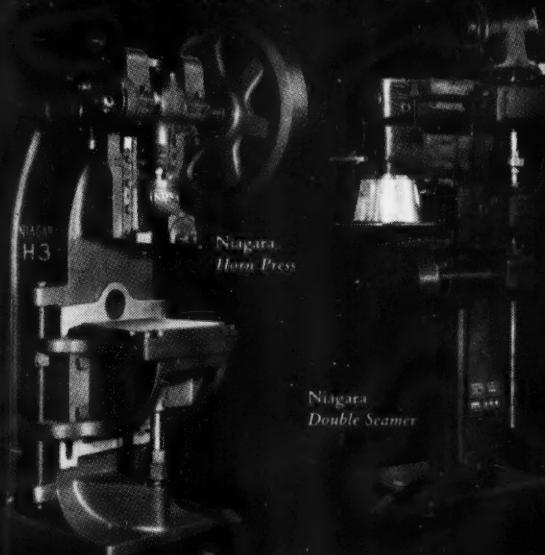
Niagara  
Slip Roll Former



NIAGARA MACHINE AND TOOL WORKS, BUFFALO 11, N.Y.

# BRA S, MACHINES and SHEET METAL

Operations including shearing, blanking, punching, forming, flanging, beading, corrugating, seaming and many others are being done quickly, economically and accurately on Niagara machines. Niagara machines and tinner's tools on these pages are just a few of the hundreds of types, sizes and capacities which make Niagara America's most complete line. Write for helpful bulletins.



Niagara  
Double Seamer

District Offices: Detroit, Cleveland, New York

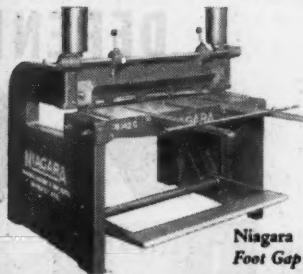


Niagara  
Ring and  
Circle Shear

Niagara  
Rivet Set and Header



Niagara  
Hollow Punch



Niagara  
Foot Gap Shear



Niagara  
Snips



• Niagara Electric  
Combination Ma-  
chine for burring,  
turning, wiring,  
beading, crimping,  
elbow edging, slit-  
ting and other oper-  
ations.

# PRACTICALLY INDESTRUCTIBLE

## ACME BENCH VISSES have ALL of these features



Maximum Gripping Power • Longer Vise Life

No Side Twist • Unbreakable Sleeve Nuts

Interchangeable Ground Jaws • Swivel Bases

11 Sizes from 2" to 6"

Also ACME COMBINATION PIPE AND BENCH VISSES with same outstanding features have 4½" wide jaws. Holds pipe ⅛" to 3½".

• • • • • Delivery from Stock • • • •

## DEPENDABLE ACCURACY



INSPECTION TOOLS made of MEEHANITE METAL are designed to fill your various Inspection and Checking needs. Sturdily constructed to give you reliable, accurate service.

Surface Plates — Box Parallels

Slotted Angle Plates

Universal Right Angles

Flat Parallels — Lapping Plates

Toolmakers' Knees — Straight Edges

Masterangle Plates — Angle Attachments

Try Squares

ALSO—SURFACE PLATES RESCRAPED—  
LIKE NEW

VISIT OUR BOOTH 732  
METAL SHOW  
Philadelphia  
Oct. 25-29



# ACME TOOL COMPANY

69 WEST BROADWAY

NEW YORK 7, N. Y.



Wherever Tools  
are held

Why is the Jacobs Plain Bearing Chuck standard equipment with 98% of all portable tool builders in the world today? It's because no other chuck offers such a powerful,

accurate, durable grip at

so low a price. The Jacobs

Manufacturing Company, Hartford 2,  
Connecticut.

Jacobs  
Chucks



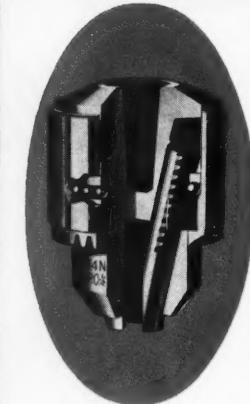
IF  
IT'S A  
JACOBS  
... IT HOLDS

HOW TO GET THE FACTS

For full details about sizes and prices of Jacobs Super Chucks, Plain Bearing Chucks and Rubber-Flex Tap Chucks, ask your INDUSTRIAL SUPPLY DISTRIBUTOR for Bulletins 48-M, 48-N and 48-T, respectively. The Jacobs Manufacturing Company, Hartford 2, Connecticut.

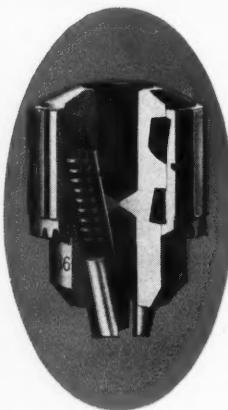
STOCKED BY YOUR INDUSTRIAL SUPPLY DISTRIBUTOR

*Jacobs Chucks*



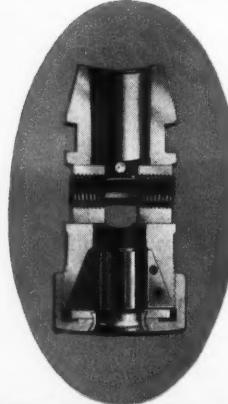
**THE BALL BEARING SUPER CHUCK**  
providing gripping power, accuracy and durability offered by no other chuck in the world today

The recently improved inserted ball thrust race and continuous deep groove, chrome nickel alloy jaws and heat-treated alloy steel nut have made this chuck the worldwide favorite for heavy-duty drilling. It is offered in six capacities from  $0\frac{1}{4}''$  to  $\frac{3}{4}''$  and is highly recommended if you desire the most from your drill press, lathe, or hand screw machine.



**THE PLAIN BEARING CHUCK** that standard equipment with 98% of the portable tool builders here and abroad

These light- and medium-duty, threaded and tapered back models are made to the same close tolerances as the Ball Bearing Super Chuck. Precision-ground construction of all moving parts results in a tightening action which maintains jaw parallelism for dead-center tooling. This chuck is made ten capacities from  $0\frac{1}{4}''$  to  $\frac{3}{4}\frac{3}{8}''$  and particularly designed for portable drill, light- and medium-duty drill presses and lathes.



**THE RUBBER-FLEX TAP CHUCK** with the parallel bite that holds true and tight

All sizes of taps get a non-slip, positive drive from the floating back jaws and a parallel bite of the unique Jacobs Rubber Flex Collet. Light weight, small diameter, firm grip and simplified tap changing combined in these accurately ground chucks. That's why they're ideal for any tapping head, tapping machine, drill press or set machine. Three chucks handle the entire range of tap sizes from  $\#0$  to  $\frac{3}{8}''$ .

HUCK  
, etc.  
ed by  
today  
  
i thrust  
chrome  
d alloy  
world  
ing. It is  
o 3-1  
a desire  
the, or

#### 1½" BEZEL

Small, light in weight,  
yet reading in .0001"  
with ease and proven  
precision.

#### SHOCKPROOF MECHANISM

STANDARD Shockproof construction absorbs shocks of sudden impacts without the slightest sacrifice of accuracy; assures high degree of consistent repeatability.

#### DIRECT ACTION

Plunger acts directly on indicator spindle, without intervention of levers; simple, dependable, avoiding loss of accuracy.

#### LONG LIFE ANVILS

Flat lower pin is tipped with tungsten carbide disc. Upper pin, as regularly supplied, has spherical surface, tungsten carbide tipped. If desired, gages can be furnished with two flat pins, lapped parallel, set and sealed.

Available in 8 sizes, each with range of 1". Design differs slightly with size, but accuracy is identical. Smaller sizes may be used in stands as comparators.



## Comparator DIAL SNAP GAGES

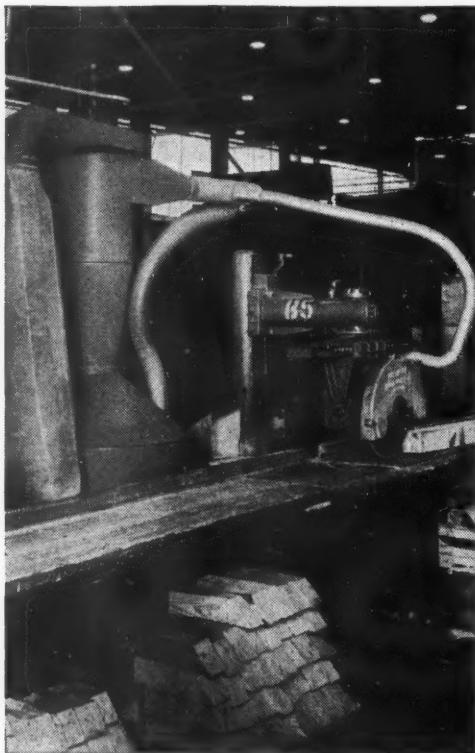
The efficiency of the STANDARD Dial Snap Gage is evidenced by the continual flow of repeat orders in large lots. Its simple, functional design, light weight, sturdiness and sustained accuracy, coupled with reasonable price have earned gratifying popularity in the most exacting plants. THIN . . . for use in narrow places; LIGHT . . . reducing the fatigue factor; PRECISE . . . easy to use, by the novice or expert, at bench or machine . . . and DEPENDABLE, ALWAYS!



WRITE FOR COMPLETE INFORMATION

STANDARD GAGE CO., Inc., Poughkeepsie, N.Y.

# TORIT DUST COLLECTORS



keep the  
"chips from flying"  
on this swing saw

Wood sawing operations are a major factory nuisance. Each cutting releases large volumes of saw dust, ranging from fair sized chips to a fine wood flour. These have an adhesive quality that makes cleaning operations difficult.

The circular swing saw illustrated here is used for cutting hardwood timbers. Suction pipes, attached to the wheel enclosure, lead to a TORIT No. 13-FB Dust Separator. The heavier particles are removed by the cyclone unit and the fine dust in the after filter.

This installation eliminates the need of a central dust system, with its maze of piping. It takes up little room. Operating only when the saw is running, it reduces costs.

Over 16,000 TORIT Dust Collectors are now cutting costs and solving the dust problem in every type of American industry. Models for all standard dust collecting jobs are now available for immediate delivery. For details and the latest TORIT catalog, write:



See our exhibit  
Booth 760  
National Metal  
Congress  
Philadelphia, Penn.

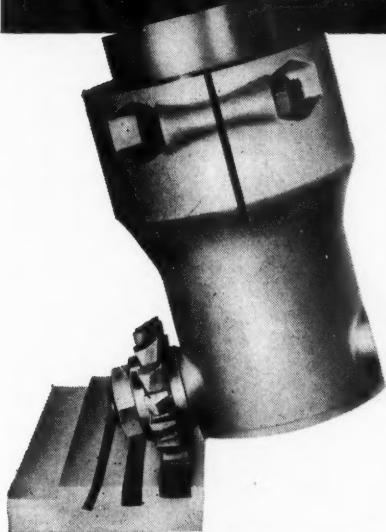
## TORIT MANUFACTURING CO.

296 Walnut Street.

St. Paul 2, Minn.

# NEW DOUBLE YOUR MILLING CAPACITY WITH THE...

# *Milmaster*



## CONVERT ONE MACHINE INTO A TOOL SHOP

Angle Milling ★ End Milling  
Horizontal Milling ★ Reaming  
Sawing ★ Drilling ★ Boring  
Slitting ★ Cutting Racks, Hobs  
and Broaches.

**BEMIS & CALL  
COMPANY  
SPRINGFIELD, MASS.**

WRITE  
TODAY  
FOR THE  
DETAILED  
FOLDER

BEMIS & CALL COMPANY, 280 Main Street, Springfield, Mass.

Send me free folder giving detailed information about the  
Milmaster "that converts one machine into a tool shop."

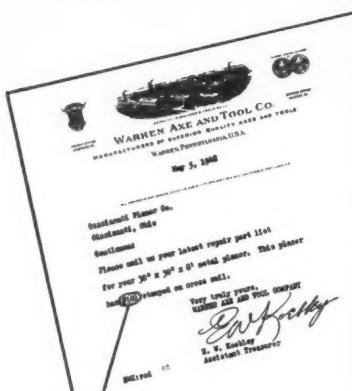
COMPANY \_\_\_\_\_

YOUR NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_

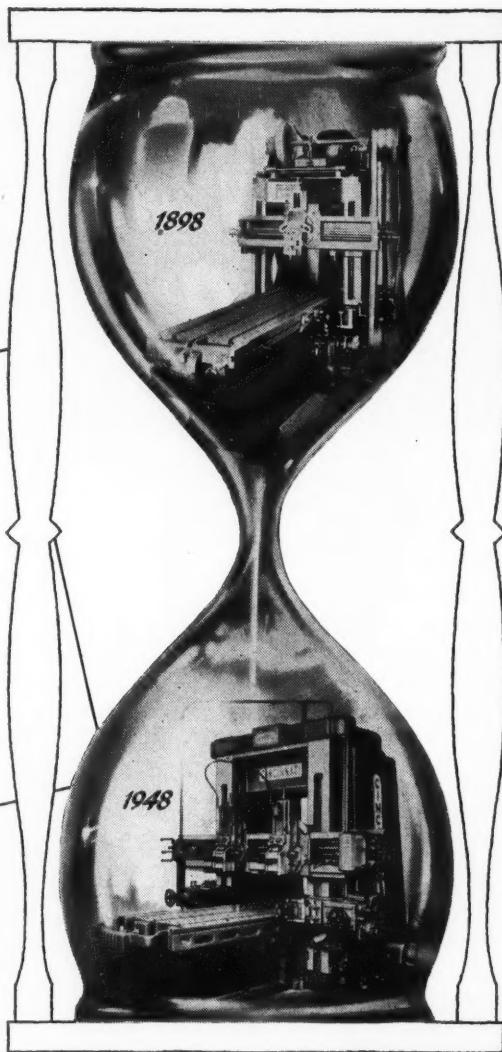
# 50 years



No. 101 was the first Planer manufactured by the Cincinnati Planer Company. They made a good Planer in 1898 of highest quality and finest workmanship which has stood the test of time.

Today we make an even better Planer. The modern Cincinnati HYPRO Planer, still retaining all of the Hypro-duction features and craftsmanship developed through years of experience, has been improved to incorporate new and exclusive features such as centralized finger-tip control for the complete operation of the machine, all steel hardened "twin" helical gear train, double nuts on both saddle and down slide screws, inverted dovetail slides, double acting tool block abutment, centralized dual saddle control and precision adjustment handles. These features provide increased production, lower planing costs and convenience to the operator.

Bulletin No. 138 will give you complete specifications. Write for it today.



**THE CINCINNATI HYPRO PLANER COMPANY**  
PLANERS · BORING MILLS · PLANER TYPE MILLERS  
CINCINNATI, OHIO

Subsidiary of the Giddings & Lewis Machine Tool Co., Fond du Lac, Wis.

# PROSSER CARBIDE GRINDERS

... pay for themselves—fast . . .

in TOOLS  
SAVED!

Shop experience proves it: Prosser Grinders reduce waste and breakage of costly cemented carbide tools—and help them deliver more cuts between grinds. Also equally effective for stellite and high-speed steel.

**QUICK SETTING.** The famous Prosser index device speeds setting of table to desired angle. Table need never be raised or lowered—and once set, it stays put.

**MORE WORK PER WHEEL.** Easy compensation for wheel wear. Wheel face can be kept close to edge of table . . . wheels can be used up practically 100%. Fewer wheel changes, more time and money saved.

Prosser Carbide Grinders are made in bench and floor models, for rough grinding and fine finishing, wet or dry. Chip-breaker and drill-grinding attachments.

Write for literature on money-saving Prosser Grinders—designed by the same Prosser engineers who introduced cemented carbide to American industry.

**Dealerships Available**

Established

1845

THOMAS PROSSER & SON

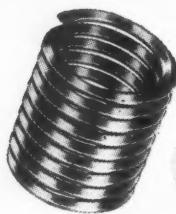
120 Wall Street, New York 5, N.Y.



Model AA  
for dry  
grinding

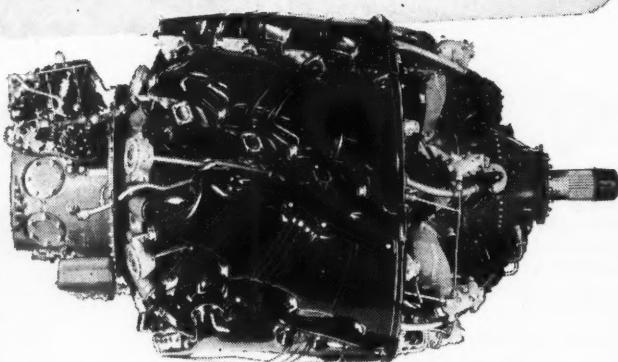
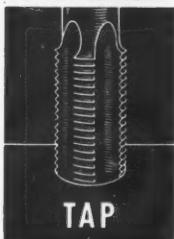
Model EE  
for grinding  
dry or wet

# HELI-COIL<sup>\*</sup> SCREW THREAD INSERTS



surpass  
where specs are rigid

Easy TO INSTALL



PRATT & WHITNEY AIRCRAFT use more than 200 Heli-Coil and Aero-Thread Inserts in their 3500-horsepower Wasp Major Engine, the most powerful radial engine in regular service.

Original equipment applications of Heli-Coil Inserts carry the names of many others of America's leading manufacturers. In automotive, railroad and industrial machinery—wherever specifications are most rigid—there you will find Heli-Coil Inserts.

Heli-Coil Inserts are precision-shaped coils of stainless steel wire that fit tapped threads in any standard screw profile. They protect and strengthen the threads in the parent metal and provide a durable thread surface that is strongly resistant to abrasion and stripping.

• Production salvage is another important application of Heli-Coil Inserts, saving thousands of dollars in otherwise expensive thread repair operations.

The Society of Automotive Engineers, Inc., has recently issued new Aeronautical Material Specifications AMS 7245 and AMS 7247, covering Heli-Coil Insert material information. Write for copies.

Send for full information.  
Engineering Representatives in Principal Cities



## HELI-COIL CORPORATION

Formerly AIRCRAFT SCREW PRODUCTS COMPANY, Inc.

47-23 G 35th STREET, LONG ISLAND CITY 1, N. Y.

\*Reg. U. S. Pat. Off.

**WILSON M.I.  
STANDARDIZING  
LABORATORY**

**...where hardness testing  
ACCURACY begins**

• Only WILSON makes the "ROCKWELL" Hardness Tester, the "TUKON" Hardness Tester and the "ROCKWELL" Superficial Hardness Tester. Universal acceptance of and confidence in these instruments — as well as Wilson-made "BRALE" diamond penetrators, Knoop and 136° square base pyramid diamond indenters and test blocks — are founded on the dependable accuracy of all Wilson products. This accuracy is rigidly maintained by the WILSON STANDARDIZING LABORATORY.

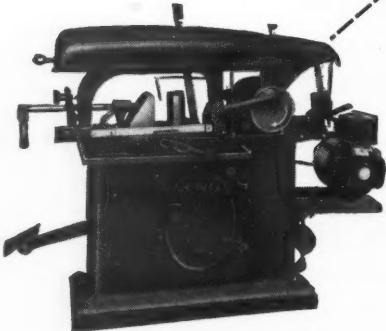
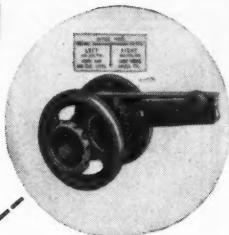
See these machines and accessories at our  
Booth No. 116 at the Metal Show

**WILSON**  
MECHANICAL INSTRUMENT CO., INC.  
AN ASSOCIATE COMPANY OF AMERICAN CHAIN & CABLE COMPANY, INC.

230-G PARK AVENUE, NEW YORK 17, N.Y.



# New Patented Feed Control Provides 0 to 70 Pounds Pressure to Saw Blade



Keller No. 3 Hy-Duty  
Power Hack Saw  
\$375.00 f.o.b. Factory

New No. 3 Hy-Duty Keller Power Hack Saw has a patented feed control. An easy turn of a hand wheel quickly applies the proper pressure to cut everything from thin wall tubing to the heaviest bar stock at maximum cutting speed . . . without injury to saw blades.

## OTHER FEATURES

Standard equipment includes automatic lift on reverse stroke . . . quick acting swivel vise . . . automatic safety stop switch . . . chip free vane type coolant pump . . . new adjustable foot lift and numerous other features.

## KELLER POWER HACK SAWS MADE IN 8 MODELS

From the 8 models of KELLER Power Hack Saws, ranging in price from \$80.00 up, you can easily select the unit for your job.

Ask your dealer about these outstanding  
Keller Power Hack Saws or write Dept. M-108.

*Sales Service Machine Tool Co.*

2363 UNIVERSITY AVE.

ST. PAUL 4, MINNESOTA

*Completely finished*

in 21 operations\* on 1

## NEW BRITAIN CHUCKER



*Illustrated at right,  
close up of 4, 5, 6,  
7 and 8 positions.*

This aluminum balance wheel is converted from rough casting to completed part at the rate of 150 an hour. By finding better methods such as this, the manufacturer succeeds in holding profit margins while keeping the price of one of the best-known sewing machines in line.

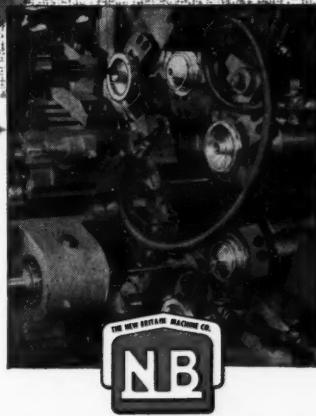
Twenty-one operations are performed on a double index New Britain Model 98 Chuck. An excellent finish results and a tolerance of  $\pm .002$  is held at two important points.

When a single machine can perform a wide variety of accurate cuts, eliminate all second operations and turn out finished pieces at a high rate... that's money-making production. You'll find it at its peak where fast, adaptable, accurate New Britain Automatic Screw Machines and Chuckers are at work.

For other examples, write for New Britain's portfolio of actual Cost Histories, yours for the asking.

1048HG2

\*For details write for Bulletin 98.



# NEW BRITAIN

*Automatics*

THE NEW BRITAIN MACHINE COMPANY

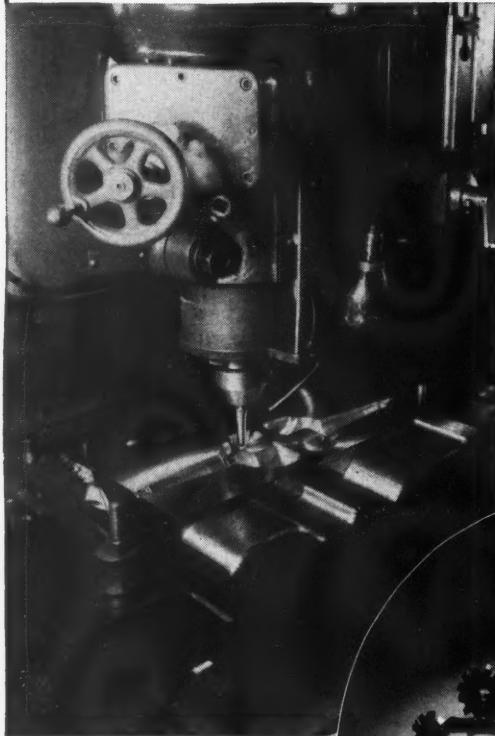
NEW BRITAIN-GRIDLEY MACHINE DIVISION

NEW BRITAIN, CONNECTICUT

# Raise the Feed!

## CUT COSTS WITH

**T-J**  
CUTTERS



A T-J Cutter at work on a drop hammer die block for steering knuckles. The material is molybdenum die steel of C45-C50 Rockwell.

Do your cutting in tough die steels faster... with less breakage... and more work between grinds! Use T-J Die Sinking Milling Cutters! They're designed for accuracy and sturdiness... made from a standard, extremely high grade steel... properly machined... scientifically heat-treated and accurately ground. Many styles and sizes... proved on countless tough jobs! Send for new catalog. The Tomkins-Johnson Co., Jackson, Mich.



FOR TOUGH JOBS SPECIFY



**TOMKINS-JOHNSON**  
DIE SINKING MILLING CUTTERS

Photos Courtesy Kropp Forge Co., Chicago, Illinois

where jobs  
*Challenge*  
equipment

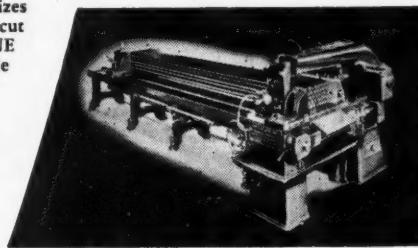


## RACINE MACHINES get out the work . . .

Out on Chicago's west side, the Kropp Forge Company puts RACINE Heavy Duty Hydraulic Metal Saws to a real performance test. In this modern forge shop, billets and blooms are cut to proper lengths for forging. Finished forgings are sawed to specified dimensions in a wide range of sizes and steel grades. Huge die blocks are also cut to working size as shown to the right. RACINE Automatics are used for high speed multiple cutting work.

RACINE'S line of metal cutting saws is complete. They are hydraulically operated to assure smooth, oil-cushioned, positive and efficient cutting of any metal. Models are available in a wide range of sizes from 6" x 6" to 20" x 20" capacity. Write for Catalog No. 12. Address Racine Tool & Machine Co., 1770 State St., Racine, Wis.

CUTTING 20" DIE BLOCK



RACINE AUTOMATIC



# RACINE

STANDARD FOR QUALITY AND PRECISION

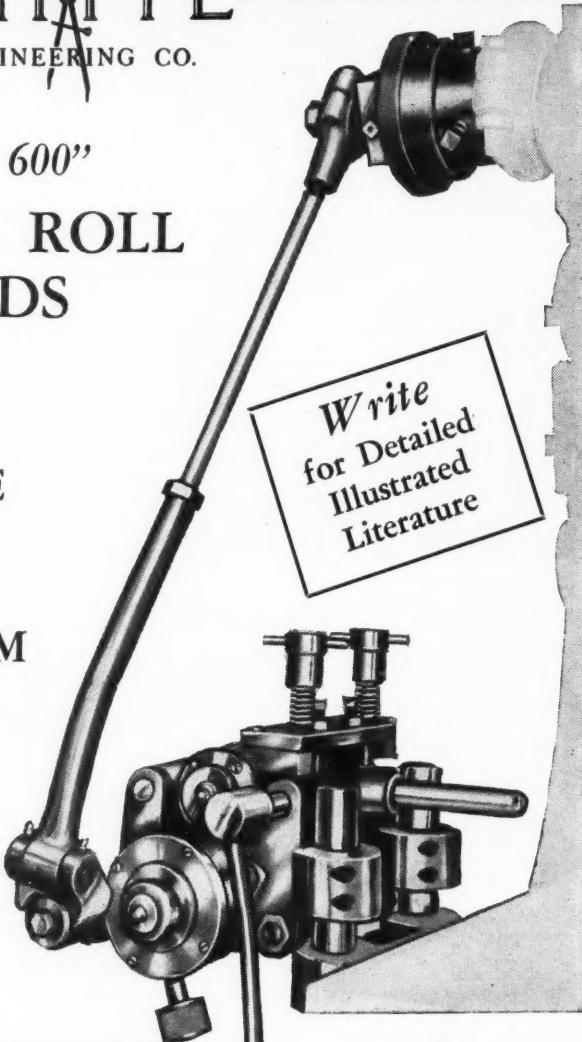
# WHYTE

ENGINEERING CO.

"Series 600"

## WHYTE ROLL FEEDS

TO  
INCREASE  
YOUR  
PRESSROOM  
CAPACITY



**WHYTE**  
ENGINEERING CO.

185 ROWLAND ST.  
SPRINGFIELD 7, MASS.

Also  
Manufacturers  
of  
**Die Feeds • Dial Feeds  
Slide Feeds  
Pick-Off Attachments  
Stock Straighteners  
Lamination Dies**

# Why take a chance... You can tell at a glance ...with P-K<sup>\*</sup> SIZE MARK

\*REG. U. S. PAT. OFF.



## SOCKET HEAD CAP SCREWS

U. S. PAT. NO. 128,408

ONE QUICK GLANCE tells you the size of a P-K Size-Marked Gear Grip Socket Head Cap Screw. No need to "mike" or gauge it... no chance for error! New workers learn faster—can work faster. Servicing and repair work on your product is simpler and easier.

GEAR GRIP prevents slipping and fumbling, speeds assembly, especially when busy hands are oily.

EVEN EXPERIENCED MEN need the Size-Mark, because tests show that many guess wrong on size and thread pitch. That means time out to find out.

LET THIS DOUBLE FEATURE — the Size-Mark and Gear Grip — save you time and trouble. Only P-K offers both in Socket Head Cap Screws. Ask for samples. Parker-Kalon Corp., 200 Varick St., New York 14, N. Y.

AVAILABLE FOR PROMPT DELIVERY

PARKER-KALON COLD-FORGED SOCKET SCREWS

SOLD ONLY THROUGH

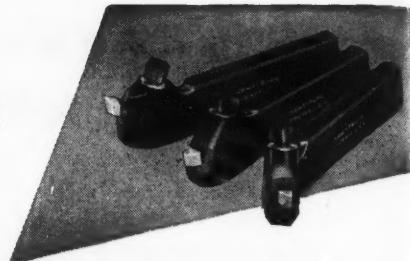
ACCREDITED DISTRIBUTORS

OTHER PARKER-KALON PRODUCTS

SELF-TAPPING SCREWS • HARDENED SCREWMAILS AND MASONRY NAILS • SHUR-GRIP  
FILE AND SOLDER IRON HANDLES • METAL PUNCHES • DAMPER REGULATORS AND ACCESSORIES



# ARMSTRONG TOOL HOLDERS



**Produce more at lower cost with ARMSTRONG TOOL HOLDERS . . .**

Today's problem of producing more without prohibitive costs is easily answered on many machining operations by the Armstrong System of Tool Holders. It is possible to materially increase output per man hour on your present lathes, planers, slotters, shapers, turret lathes and screw machines, by simply using the correct ARMSTRONG TOOL HOLDERS for each operation.

With the correct ARMSTRONG TOOL HOLDERS you not only increase cutting efficiency but can safely step up speeds and feeds far beyond those ordinarily used. Included in the modern Armstrong System are special ARMSTRONG TOOL HOLDERS and special cutter bits and blades that cover the complete range of modern cutting speeds. ARMSTRONG HIGH SPEED cutters for all cutting speeds to 200 f.p.m., ARMALOY (cast alloy) Bits and Blades that operate best around 300 f.p.m. and ARMIDE (carbide-tipped) cutters that operate efficiently at rates as high as 600 f.p.m.

ARMSTRONG TOOL HOLDERS, Bits, Blades and Cutters, can be picked up as needed from your industrial distributor.

**WRITE FOR CATALOG.**

**ARMSTRONG BROS. TOOL CO.**

**"The Tool Holder People"**

**5228 West Armstrong Ave., Chicago 30, U. S. A.**

Eastern Whse. and Sales: 199 Lafayette St., New York 12, N. Y.

Pacific Coast Whse. and Sales Office:  
1275 Mission Street, San Francisco 3, Calif.

# MODERN Machine Shop

OCTOBER, 1948

VOL. 21, No. 5

CINCINNATI, OHIO

---

## *This Month*

Departing from our standard policy of presenting articles dealing with the techniques of management or with the design and application of production tools, in this month's issue the editors have attempted, by recounting stories of successful men and firms with whom most of us are familiar, to present a conclusive case for the advantages of a free economy.

Freedom—the birthright of the American citizen—should need no defense, but in these days of confusion, with economic gangsters, in some cases grasping politicians, and unscrupulous demagogues taking advantage of war-born shortages in an effort to induce the American people to surrender their birthright for a mess of "government control" pottage, the story of the advantages of freedom for the individual cannot be repeated too often.

Here are sagas of industries which have grown up within our own generation, and stories of men who, within our own generation, starting with nothing more than freedom of opportunity, have climbed to the top rung of the ladder. To such men and the organizations they have built can be given most of the credit for the high standard of living enjoyed by the American people.

May we suggest that recipients of this issue share their copies with others so that these stories exemplifying the opportunities that are available to all under the American system of freedom may reach as many readers as possible.



Howard Campbell

# The American Way

By HOWARD CAMPBELL  
Editor, MODERN MACHINE SHOP

**W**HEN the American colonists decided that the time had come to break away from domination by an old world government and from old world ideas, they drew up a "Declaration of Independence" in which they expressed their conviction that all men are endowed with three "unalienable" rights; life, liberty and the pursuit of happiness.

This statement of principle is the basis of the American system—the American way of life. Until the American Revolution, various forms of slavery and bondage were accepted institutions in the civilized world. Many of the early immigrants to the new world, who afterward became good and loyal American citizens and founded solid American families, came to this country as debt-ridden bondsmen, to be held in slavery at miserable wages until their debts were paid.

With the defeat of the British armies a new nation was born, "conceived in liberty and dedicated to the proposition that all men are created equal." In this atmosphere of freedom, life for the American people took on new meanings; Freedom by its very nature offered incentives to accomplishment. The knowledge that all citizens were free and equal under the law of the land, that no person might be molested as long as he was keeping the peace and that no man's home might be invaded without due process of law and reasonable evidence of lawlessness banished the last vestige of fear from the minds of the colonists and permitted them to focus their faculties and energies upon developing their talents for a better life for themselves and for their children.

Under freedom, the opportunity for award for achievement has resulted in the development of a standard of living which is the envy of the whole world. Unhampered by tradition, with the resources of a vast new continent upon which to draw for materials, with a fast-growing new nation as a market, citizens of this new world originated a new type of thinking in the realms of invention and production—a type of thinking which has expanded with each succeeding generation. The result has been that today America, with only 6% of the earth's area and 7% of its people, has 60% of the world's telephones, 72% of its motor cars, 92% of the world's bathtubs, 35% of the world's railroads, two-thirds of

the world's banking resources, and a purchasing power which even in days of universal prosperity was greater than that of all of the people of Europe put together.

American mass production methods—the product of "Yankee ingenuity"—began with an idea of one Eli Whitney who, in 1800, conceived the idea of producing muskets on a mass production basis through the use of interchangeable parts. The interchangeable parts system developed slowly through the earlier decades of the 19th century, but with the invention of the screw cutting lathe and the increasingly rapid development of machine tools, the interchangeable parts method of production came into more general use.

Watt's steam engine existed only in theory until 1774 when John Wilkinson invented a boring mill with which a cylinder could be bored so accurately that it would be tight enough to hold steam. Without the early machine tools that were designed for turning, planing, drilling and grinding, the pioneer machine tool industry upon which the industrial age is founded could never have been developed.

In the 1880's a German inventor named Otto and a man named Seldon in America invented the internal combustion engines which were later hitched to carriages, bringing about the development of the automobile industry. The introduction of the automobile into American life opened up opportunities for a high living standard and added avenues of approach to the pursuit of happiness. A comparatively high level of prosperity presented a huge potential market, and American ingenuity was applied to the development of tools and methods by which automobiles could be produced on a mass production basis and at a cost which would bring them within the reach of all. The mass production tools and methods thus developed were adopted by manufacturers of other kinds of products, with the result that the living standards of America have been raised at an ever-increasing pace.

America's unprecedented and unequalled prosperity is based upon the mass production tools developed by American engineers. Of these, the most important is the metal-working machine—commonly known as the machine tool. All machines that are made of metal, regardless of the industries for which they are made or the purposes to which they are put, are made by the use of the machine tool. The machine tool is the only machine that can be used to reproduce itself. Thus the modern American precision machine tool, developed to its utmost possibilities in an atmosphere of freedom, has played an important part in the American way of life.

American capital provides to American labor, on the average, eight times more tools and power than are available to workers in other countries. With the use of these highly developed tools the American workman can produce many times as much as workmen in other countries, who do not have the advantage of such tools. The output per man in pre-war Germany, where American methods were being copied as rapidly as possible, was less than half of production figures

in American industries; in Japan and Russia the output was still less, tapering down to a ridiculously low figure in countries where modern tools and methods had not yet been adopted.

During the war America, single-handed, out-produced the combined powers of the Axis. America was the one nation that was able to arm and equip all of its own fighting forces and still give vast quantities of arms and munitions to its allies. And now that the war is over, the nations of Europe—many of which have become engulfed in Communism—seek the help of the only nation on earth that can produce enough and give them enough to keep them from actual starvation. That nation is America.

Under American freedom and democracy, people who have saved and accumulated beyond their immediate wants can pool their surplus capital in order to set up factory buildings, buy machinery and tools, and develop industries which will provide jobs for themselves or for others. This is capitalism—and the principle of Capitalism is just as simple as that. American high production methods and machines make possible the necessities and luxuries of life at prices which make them available to all, which is the basis of our envied American high standard of living. But these high production machines must be purchased and set, and tooled, and powered so that jobs may be provided for the workers who assume the tasks of production; thus "capital" is required before production can begin.

The Continental Can Company invests \$7,127 in plant equipment and tools to make a job for one worker. On that basis, jobs for 100 workers require the investment of nearly three-fourths of a million dollars. The people who lent their money to set up these jobs received receipts for their money in the form of shares of stock which stated that they should be paid for the loan of their money, the payment to be in the form of interest or "dividends," payable at regular intervals. Without the \$750,000 to invest, the Continental Can Company would have been unable to provide these 100 jobs, 100 families would have been forced to look elsewhere for income, there would have been many less cans available to the market with the probability that cans would have been higher priced, and this capital, which otherwise would have been idle, was put to useful work.

A great deal has been said by Communists, Socialists, and many leaders of labor organizations about the amount of rent that one should receive for the use of his money, in other words, the amount of "profit" that should be paid to a capitalist. Official United States Government records show that corporate profits in 1947 amounted to about 6.2% on sales. That means that when a person spent a dollar for a manufactured article, 6c of that dollar was profit. But it should be remembered that that 6c provided all the machines that produced the article—and machines did 85 per cent of the work required for production. It is that 6c, moreover, which has made it possible for an American to buy an automobile for

\$2,000 to \$2,500 which, made by hand methods, would cost approximately \$50,000. At such a price few people could afford automobiles; thus the market would be restricted, employment in automobile factories, the oil industry, the steel mills, and other industries would be but a fraction of its present volume.

The government report shows that only 3.1% of the total national income went to stockholders last year. What happened to the rest of the profit? It was put back into the business to meet the rising costs of equipment and materials. Costs of raw materials have been rising tremendously and during the past year it has taken more money to buy them, so more money had to be made available for materials purchases. A part of this money also went to replace machines and equipment that wore out. It now costs twice as much to provide the machinery necessary to produce a ton of steel as it did before the war, and the costs of other production machines have increased in the same ratio.

The greatest paradox of the era is the fact that free enterprise is under attack by the very countries that were saved from destruction by American free enterprise during the recent war, and whose people are being fed and whose industries are being rehabilitated by the American free enterprise system today. The people of those countries are fortunate that under the American free enterprise system our production has been high enough so that we can spare the food and machines and equipment and dollars with which those countries are being restored to self-maintenance.

Communism takes the stand that "no man should be rich." Capitalism takes the stand that "no man shall be poor." When a comparison is made between the high living standards and prosperity and well-being of the American people and the low living standards and poverty of a very high percentage of the population in the foreign lands that are under Communist control, the answer as to which system is preferable should be self-evident.

American freedom means freedom to engage in business or to work where one will. Under a "controlled" economy such as prevails in countries operating under Communist or Socialist governments, the freedom of the individual is restricted. Under Communism the government owns and operates all industry, and jobs are available only to workers who qualify by declaring their allegiance to the Communist system. No worker can leave one job for another, or move from one place to another, without official permission. A worker who incurs official displeasure, either for failure to meet production requirements or for lack of enthusiasm for the system, may be deprived of his job and thus his ration card, leaving him and his family, if he has one, facing the possibility of starvation. If he becomes a public charge—which is practically inevitable—he will probably be sent to a forced labor camp, to become one more of the hundreds of thousands of slaves to their own government.

Inasmuch as Russia is the outstanding exponent of the totalitarian system of

government, let us make a few comparisons. Early in the history of the Communist regime in Russia, the government closed the churches and tried to stamp out the Christian religion in an effort to replace the Christian code of ethics, honesty and truth with crass materialism. Today the Communist party in Russia has some 6 million members out of a total population of approximately 190 millions of people, the 190 millions being forced to do the will of the 6 million by force of arms, secret police, and spies.

The vast army of secret police is maintained to prevent any Russian citizens from leaving the country and to prevent others from getting in without proper credentials; to spy out and arrest any who criticize the acts or policies of the government or its officials, and to make sure that no person leaves his job or his home or engages in any pursuits for which he has not obtained official permission.

Americans who have been in Russia report that the housing situation there is much worse than it is in America, with little prospect of relief. How does the worker fare under the Communist system? With his entire week's pay the average Russian worker can buy 22½ one-pound loaves of white bread; the American can buy 394, assuming that anyone wants that many. The Russian's weekly wage will get him 16.9 pounds of sugar; the American's, 506 pounds. The average Russian has to work seven weeks to buy a suit of clothes—and a shoddy suit at that. He must work two or three weeks to earn a pair of shoes, while the American can get six to eight pairs for a single week's pay.

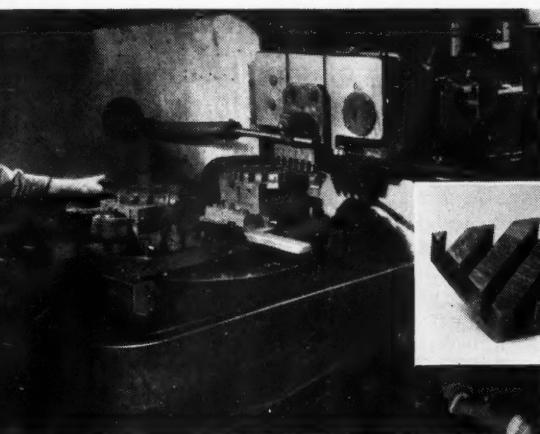
Totalitarianism—call it either Socialism or Communism—means (1) the destruction of a government of checks and balances, of principles, of rights, of parliamentary meeting of minds and popular suffrage, (2) it means government by decree, bureaucratic planning, and concentrated, irresponsible authority, (3) it means the regimentation of the people by means of the expropriation of employing capital and the taking over of the ownership of the wealth of the nation by a class of professional politicians, and finally, (4) it means the end of freedom and of free enterprise.

Our American heritage of freedom was purchased for us and has been maintained for us at the cost of hundreds of thousands of lives. Let us prove that we are still worthy of that heritage by exerting ourselves to the utmost to the end that the American way of life may be maintained.

## FREEDOM IS EVERYBODY'S JOB

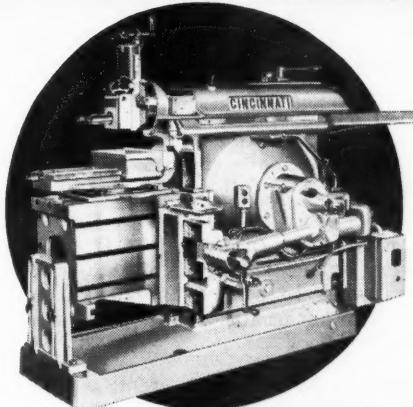
# 90 pieces per hour

...on this **CINCINNATI SHAPER**



Photo—courtesy Printing Machinery Co.

Work piece is a malleable iron, Warnock diagonal block. Rate of production, 90 per hour. Specially designed gang tool holder carries six form ground high-speed tools.



This high production, special Cincinnati Shaper, designed by Cincinnati engineers, is completely automatic. With a comparatively low initial cost, and low cost of tooling, it gives a high return on investment.

The operator starts the machine; the head feeds nine strokes to right, nine to the left, and the Shaper automatically stops at rear position. The operator indexes the fixture and then starts another cycle. Loading and unloading are done while the Shaper is cutting.

Consult us on your shaping job, and the possibilities of a special Shaper.

**THE CINCINNATI SHAPER CO.**

CINCINNATI 25, OHIO U.S.A.  
SHAPERS • SHEARS • BRAKES

# The Miracle of America

The Advertising Council tells how our economic system and democratic way of life have enabled us to produce more and better goods at lower cost and give the American people a standard of living far surpassing that of any totalitarian country in the world.

**A**N advertising and publicity campaign to explain to the American people our economic system and just how it operates will shortly be launched by the Advertising Council, a non-profit organization. This group is made up of leading companies doing national advertising, the advertising agencies, the advertising media (magazines, newspapers, radio stations, and billboards).

The Council has prepared a pamphlet *The Miracle of America* for free distribution throughout the United States, from which the following excerpts have been taken:

## Have we Americans got something?

America operates under a system of political democracy and of free, competitive business activity—as American as baseball. We aim to give an open field and a fair chance to all of our people; workers, owners, farmers, business and professional people and the public in general. Admittedly our system has its shortcomings, its inequalities, its faults. We have . . . ups and downs of prices and jobs . . . poverty . . . poor housing . . . monopolies. (But) within less than 100 years, (1850-1946), we have:

Increased our output per man-hour of work more than five times—from

27 cents to \$1.41 (in terms of today's purchasing power); . . . reduced our average work-week from 70 hours to about 40 hours . . . given ourselves the highest standard of living ever known by any people at any time.

## Our system has already given us:

**Income:** Our average annual income per household rose from less than \$2,400 to almost \$4,000 (in today's dollars) between 1910 and 1946—a two-thirds gain.



**Education:** In 1910 only 44 out of every 100 boys and girls of high-school age went to school. By 1940, there were 65 out of 100, and the proportion is rising.



## **Secret of success: "Productivity"**

We have the highest standard of living in the world because we have been able to produce more goods and services in every hour we have worked. We have turned out more goods and services because we have used increasingly better machines, more power... and greater skills—and because we have shared the benefits in higher wages in relation to prices, greater profits, more jobs, more business.

Productivity means output per worker for each hour worked:



ONE MAN  
AT MACHINE



WORKING  
ONE HOUR



PRODUCES  
10 PAIRS OF SHOES

With a better machine, more power... greater skill or a better process, let's say output doubles:



ONE MAN  
AT MACHINE



WORKING  
ONE HOUR



PRODUCES  
20 PAIRS OF SHOES

One man working one hour on a machine can now double the output of shoes. This makes possible:

**Shorter Working hours:** because more shoes can be made in less time.

**Lower prices:** because the cost of producing each pair of shoes is less.

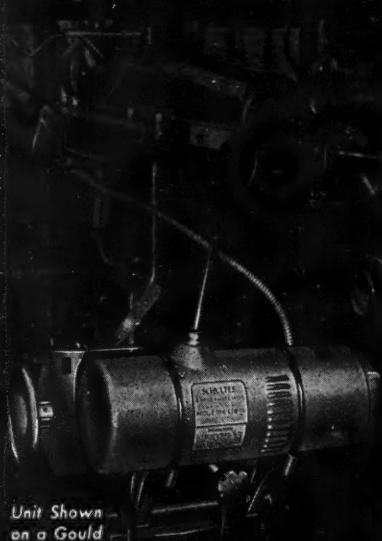
**Higher wages, greater profits, more money to expand business:** because the increased income from the increased output can be divided among workers, management, and stockholders.

**More jobs and more shoes for more people:** because higher wages and profits and lower prices mean more demand for shoes and everything else.

All of us gain when output per hour

# "SCHULTES"

## *The King of Motor Drives!*



Unit Shown  
on a Gould  
& Eberhard

**ALL HELICAL GEARED,  
UNSURPASSED IN POWER,  
EFFICIENCY, SAFETY AND  
COMPACTNESS**

Write for Complete Detailed Specifications

**Schultes Level**  
INCORPORATED

17403 GABLE DETROIT 12  
MICHIGAN

goes up; when it declines it hurts us all.

#### Machine power does the job

While greater skills on the job and better production methods have done a great deal to increase our productivity, the use of coal, oil, gas and water power, applied through machines, has done by far the most to increase output, income and jobs.

#### More machines—more goods

Increasing use of mechanical power is the secret of our ability to keep . . . productivity and . . . income going up.

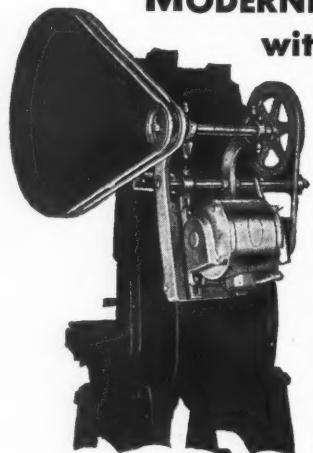
#### Economic freedom vs. dictatorship

Through our free, competitive American system . . . we have been able to out-produce every other na-

MEN	1850 15%	1900 10%	1946 4%
ANIMALS	79% 	52% 	4% 
MACHINES	6% 	38% 	92% 
GOODS PER HOUR	27¢ 	56¢ 	\$1.41 

tion . . . and so give to our people more of the good things of life. The figures shown illustrate this. They

## MODERNIZE Your Machine Tools with MODERN MOTOR DRIVES



You get more efficiency, more economy and more horsepower to the job with MODERN "V" Belt Drives. MODERN MOTOR DRIVES utilize standard 1750 RPM motors. Drive shafts are equipped with 'Triple Seal' ball bearings . . . no need to lubricate. In use by leading manufacturers everywhere to improve efficiency of outmoded machine drive methods. Available for practically every type and model machine tool.

*Write today for catalog. Immediate delivery.*

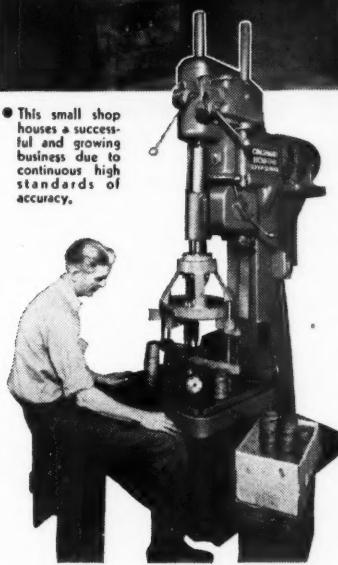
**THE NICHOLS ENGINEERING CO., MODERN MOTOR DRIVES DIV.**  
2400 W. MADISON ST., Dept. 618

CHICAGO 12, ILL.

# 4-Man Shop with a FUTURE



● This small shop houses a successful and growing business due to continuous, high standards of accuracy.



Quality equipment pays the small operator as well as the large.

The Schoening Machine Service, 3284 Dunn Street, Cincinnati, Ohio—business, production machining—small in size—big in accomplishment—testifies to the value of fine tools.

The Cincinnati Bickford Super Service Upright Drill, illustrated, is drilling five  $\frac{3}{8}$ " holes and four  $\frac{1}{2}$ " holes to a plus or minus .005" tolerance in a steel cover  $\frac{1}{8}$ " thick—a production job.

Mr. Schoening tells us he has held accuracy to a plus or minus .0002" on production reaming jobs.

Write for Bulletin No. U-25.



Equal Efficiency of Every Unit  
Makes the Balanced Machine

**THE CINCINNATI BICKFORD TOOL CO.** Cincinnati 9, Ohio U.S.A.



were gathered . . . in 1939, and so were not affected by the devastation caused by the war . . . Imagine a

basket of 24 foods in common use. Then take the average hourly wage of a factory worker in various countries and see how many baskets of food that hour's work will buy.

### **FREE ECONOMIES**



**2.8 U. S. A.**



### **DICTATORSHIPS**



**1.3 ENGLAND**



**1.2 FRANCE**



**1.1 BELGIUM**



**1.0 GERMANY**



**0.7 ITALY**



**0.4 RUSSIA**

### **What about your job—if atomic energy drives our machines?**

Suppose, in the next year or two, some of the wizards of the atom-splitting business discover how to put atomic power to work in industry?

We doubt if they will, but suppose

they do get things down to a point where a spoonful of uranium, or whatever it is, will run all the autos, airplanes, ships and trains . . .

. . . Every time a new and more efficient source of power has been developed, something really wonderful has happened in this country . . . a man can

turn out more goods in a day's work with the help of power than he can without it.

### **Challenge of the future**

Even if we do no better in the future than we have in the past, the record of our actual performance shows that:

**If we have no major depression**

**If we are at peace**

**If we go on increasing . . . productivity (and sharing the benefits) as we have in the past, we can have by 1960:**

**More Jobs**

**More Vacations**

**Greater Output**

**Higher Income**

**Increased Travel**

**Better Schooling**

**Greater Population**

**More and Better Food**

**Greater Security**

**More and Better Homes**

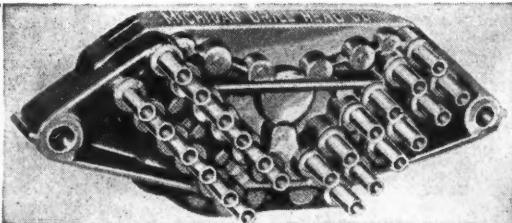
*Pictured: a 24-Spindle Heavy-Duty Drill Head.*

**DESIGNERS AND  
MANUFACTURERS  
OF MULTIPLE DRILL-  
ING EQUIPMENT.**

**We Invite Your Inquiry.**

**MICHIGAN DRILL HEAD CO.**

**971 E. 8-Mile Road, Hazel Park, Mich.**





JOB  
PROVED

## MAKING THE BIG CHIPS FLY!

**Sunoco Emulsifying Cutting Oil Is Used for  
Rough-Finishing Heavy SAE 3140 forgings**

The correct cutting fluid is a big factor in the continuous heavy-duty machining of tough steel forgings on the machine shown above.

**Machine:** Warner & Swasey 4-A Heavy-Duty Turret Lathe

**Material:** SAE 3140 Forging

**Operation:** Roughing-Out Cap for Pile-Driving Machine

**Cutting Fluid:** 1 part Sunoco Emulsifying Cutting Oil to 20 parts water

Sunoco Emulsifying Cutting Oil is a viscous, self-emulsifying oil that quickly and easily forms a stable emulsion with water. It contains no animal or vegetable fats, and will not turn rancid.

Sunoco Emulsifying Cutting Oil meets the demand not only of tough cutting jobs, but also of a wide range of turning, milling and grinding operations calling for close tolerances and fine finishes. It is particularly efficient where precision is demanded in high-speed machining.

For full information, and samples for testing in your machines, call your nearest Sun office, or write Department MM-10.

**SUN OIL COMPANY • Philadelphia 3, Pa.**

*In Canada: Sun Oil Company, Ltd.*

Toronto and Montreal

**SUN PETROLEUM PRODUCTS**  
"JOB PROVED" IN EVERY INDUSTRY



## **Shorter Working Hours**

But we ought to be able to do even better in the future than we have in the past—if we all work together to increase our productivity and to spread its benefits through increased wages, lower prices, shorter hours, more jobs, and better collective bargaining, as well as more income to owners. Only in this way can we hope to level off the ups and downs of prices and jobs, avoid depressions, reduce industrial disputes and enjoy the good things for all which our economic system can give us.

## **A Platform for Americans**

The program of the Advertising Council's public-service campaign for a better understanding of our American economic system is based on the following 10-point platform. The points are . . . goals . . . which we have been able to realize in varying degrees.

This is a platform on which all Americans can stand. It has been enthusiastically endorsed by the Council's Public Policy Committee, whose present members represent all groups in our national life.

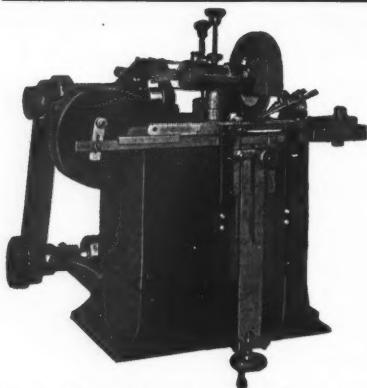
**1. Freedom of the individual to work in the callings and localities of his choice.**

**2. Freedom of the individual to contract about his affairs.**

**3. Freedom of the individual owner of private property to start and manage an enterprise, to invent and profit thereby, to invest in a profit and loss system, to buy and sell in a free market—insofar as this freedom does not conflict with the public interest.**

**4. Freedom of the individual to speak, to inquire and to discuss.**

**5. Protection for the individual—by public or private means—against the basic hazards of existence over which he may have no control.**



**Wardwell Model EC Combination Grinder**  
The only single unit grinder adaptable for hack, band and circular saws that does not depend on the shape of the grinding wheel to form the shape of the tooth. • This unique feature enables operator to grind a variety of blades without dressing or changing wheels.

**if your metal saws  
are replaced too frequently  
LOOK TO YOUR SHARPENING  
METHOD**

Temper toughness and cutting ability of metal cutting saws is affected by the care used in sharpening. When precisely ground, each tooth will take the maximum bite with minimum destructive effect on teeth. Proper sharpening of blades will pay for this grinder through savings of labor and material. Adaptable for circular, hack and band saws.

**Write for Details**

**THE WARDWELL MANUFACTURING CO.  
3166 Fulton Rd., Cleveland 9, Ohio**



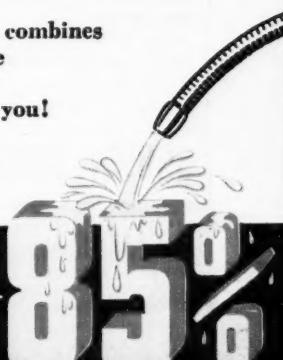
## See for yourself how CIMCOOL covers 85% of all metal cutting operations

The picture gets brighter in more plants every week as Cimecool takes over 85% of all metal cutting operations—and does a *better* job. This new kind of cutting fluid replaces all water emulsions and all but a few highly compounded specialty oils. It proves itself by improving machine performance.

Cimecool is different—a *chemical emulsion*—that combines friction reduction and cooling capacity in a degree never before attained. It increases tool life, permits faster speeds. One test run will convince you!

**CIMCOOL DIVISION OF THE CINCINNATI MILLING MACHINE CO.,  
CINCINNATI 9, OHIO, U. S. A.**

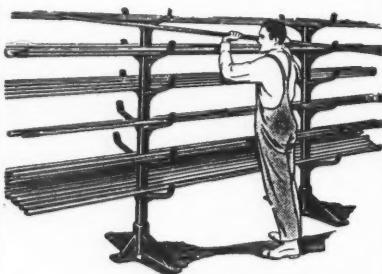
**CIMCOOL** *for* **85%**





# 5 IN 1

Each BROWN SECTIONAL RACK combines five major and several minor features of design, all of which save money for its owner. The time previously lost in end-hauling each bar of stock its entire length from the old-style, closed-side Rack is saved by the Brown Rack which requires but a few inches of side movement.



Each length, width and thickness of stock is displayed in Gold-Fish visibility for instant selection and workmen waiting for stock are served without waste of time. The BROWN SECTIONAL RACK is a simple, durable article built in five styles from standard inter-locking metal sections. It cannot burn, sag or twist; unattached to the building, it can be moved at will. Changes in length of stock can be met by moving the units nearer or further apart, while increases of stock can be met by simply adding more standard units. Built from metal thruout, depreciation is practically nil. SEND FOR BULLETIN 26-M.

## BROWN SECTIONAL RACK

BROWN ENGINEERING CO.

120 N. THIRD ST. READING, PA.  
RACKS • VISES • SLITCHES • COUPLINGS

6. Government action in economic affairs, when necessary, to ensure national security or to undertake socially desirable projects when private interests prove inadequate to conduct them.

7. Freest possible competition consistent with the public welfare. We are opposed to unregulated monopolies of any kind.

8. Free collective bargaining — the right of labor to organize and to bargain collectively with employers.

9. Expanding productivity as a national necessity. American experience has proved that it is in the long-run interest of all: (a) to pay labor progressively higher wages in relation to prices; (b) to do this by progressively increasing productivity per man-hour through the application of constantly greater mechanization, power, efficiency and skill in the processes of production and distribution; and (c) to reduce hours of labor and improve real income while increasing the volume of production and distribution.

10. Increased recognition of human values as a prerequisite to better living. As a technological society develops, it inevitably produces a varying amount of industrial displacement and unemployment. While no solution of this problem has been found, the American people have sought to deal with it, not through a compulsory assignment of laid-off workers to other tasks but through such devices as unemployment insurance, employment services, vocational retraining, public works, community employment projects and family welfare programs. But much remains to be done.

(Special Permission granted by LOOK Magazine to print this article.)

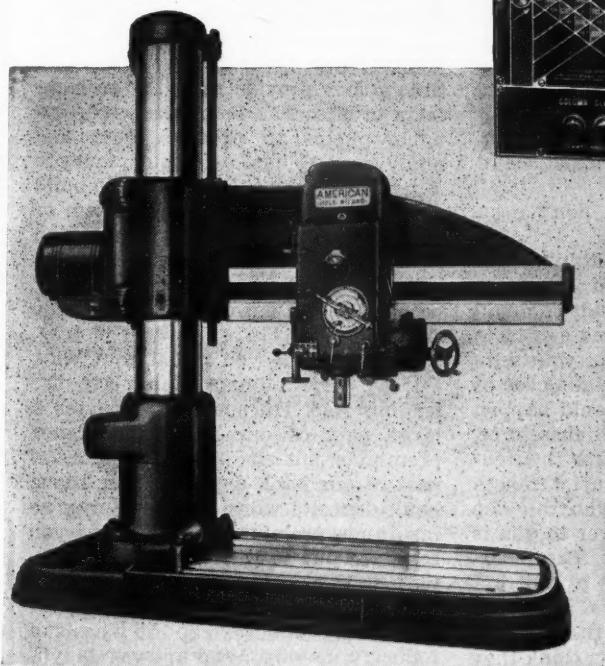
FREEDOM  
IS  
EVERYBODY'S JOB



# 32 SPINDLE SPEEDS

Operators are enthusiastic in their praise of this new direct reading speed control. They don't have to refer to index plates or retain lever positions in their minds when making speed changes. Its superiority and convenience encourages operators to use correct speeds for their work. Being direct reading, operators are not fearful of making mistakes.

The entire range of 32 spindle speeds is secured through two opposed vertically operated



...with only  
2 Control Levers and  
1 Back Gear Lever

levers which are direct reading and one two-position back gear lever used only when changing from the high to the low speed range or vice versa.

This new speed control makes work easier; increases production because of it and the payroll dollar buys more as a consequence.

This and other fine features of the "American" Hole Wizard Radial Drill are thoroughly illustrated and described by Bulletin No. 326.

**THE AMERICAN TOOL WORKS CO.**

Cincinnati, Ohio, U. S. A.

*Screw and Radial Drills*

# Who's A Capitalist?

By JAMES C. STUART  
Ketchum, MacLeod & Grove, Inc.

A. Who's a capitalist?

B. You are!

A. Don't be funny. I'm no more a capitalist than you are, and you know it.

B. But, I am a capitalist.

A. Now listen, Jim, I've known you a long time. We work together. We live in the same neighborhood and belong to the same union. Don't try to hand me that stuff. You're just a common ordinary working man, the same as me.

B. Sure, I'm just a working man, and I'll probably always be a working man. But that doesn't prevent me from being a capitalist. I still insist we're capitalists.

A. Are you nuts? You don't even talk sense.

B. That's what you think. But strange as it may seem to you, I am talking sense. Good sound common sense. Look—you're married and have two kids. You think a lot of your wife and kiddos, so in order to take care of them in case anything should happen to you, you took out life insurance. You're building an estate for their future. Or maybe you only carry enough to provide for your own funeral. The point I'm trying to put over to you is that you're saving money. The insurance company has made a contract with you in exchange for a certain amount of money you pay them at regular intervals. What do you think they do with that money—put it into a safe deposit box.

A. Don't be silly. Everybody knows

they invest it in stocks and bonds, mortgages and real estate.

B. Certainly, they invest it. They are investors of your money and mine. And through these investments, many industrial corporations get money for new plants and machinery. Railroads buy rolling stock. Public utility companies build power plants. Cities and states build highways, schools, sewage disposal plants, water purification plants, dams, bridges and all kinds of things that provide us with the comforts of life. The insurance company money helps to provide these and many more things. And your money is a part of it. So you're helping to build and maintain our economic system or social order, whatever you care to call it.

A. I never thought of it in that way before. It just never occurred to me that even I play a part in this picture.

B. A part! If you put it that way, I'd say Mr. Common Man plays the leading role. He not only provides a large part of our annual insurance premiums, but also a very substantial part of our bank deposits. You know, bank deposits work the same way as insurance premiums. The dollars you save are put to work with other people's dollars, either loaned or invested. Very similar uses are made of your money and mine to keep the wheels of industry moving. Who knows? Maybe your money helped buy that new streamlined train the railroad just put on—or that new mill that rolls out

steel strip at a mile a minute—or maybe that high school that we just opened last fall. Who knows? Yes, we're both capitalists.

A. But say—we're not the only ones then. There must be millions of them.

B. You said it, fellow. I just read the other day that in the United States there are over 45 million bank depositors and more than 73 million individuals insured. Altogether they provide a heap of money each year for our banks and insurance companies to invest.

A. You know, it sure must be one heck of a job handling so much money and making certain of the soundness of the investment.

B. Yes, and just think—it's all the tougher for the one who makes the decisions when he realizes it is not his own money he's investing. I don't think I'd want the job.

A. Me, either. I'll be content to keep

on being a common man and let the bank and insurance companies do their own work.

B. You said something there. It takes all kinds of people in all kinds of work to keep this world of ours moving along. And each must cooperate and have confidence in the other.

A. Thanks, pal, for putting me straight. The next guy that starts ranting against capitalism is certainly going to hear from me, for now I know if he's against our system, he's against me, too.

(Special permission granted by PRINTERS' INK to publish this article)

**I**N the first seven months of 1948, production approximated 2,980,000 vehicles—2,150,000 passenger cars and 830,000 trucks. In unit output, this put the industry about 215,000 vehicles ahead of their showing for the corresponding period of 1947.



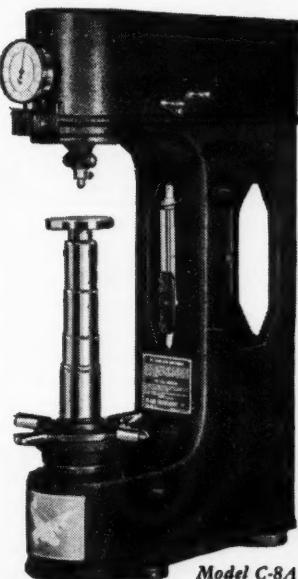
## HARDNESS TESTER

### *Better Engineered for Better "Rockwell" Testing*

For your "Rockwell" testing, you want an instrument that gives you results of unquestioned accuracy. Years of research have gone into making the CLARK Hardness Tester just such a precision instrument.

The CLARK gives you accurate results for every production requirement. It is durably built to give you years of dependable service. It is fast and simple to operate; easy to maintain. Compare the CLARK and see for yourself how much more it has to offer.

**CLARK INSTRUMENT, INC.**  
10200 Ford Road • Dearborn, Michigan



Model C-8A

\$450.00 F.O.B. Detroit  
Complete with diamond penetrator

# DALLETT PNEUMATIC

## SCALING & LIGHT CHIPPING HAMMERS



DALLETT'S KA  
Series Lever or  
Handle trigger  
throttle valve control.  
Coin-valve type Ham-  
mer developed for light  
chipping, removing fins  
and sand from castings  
and for general scaling.

**DISTRIBUTORS:**  
*In Principal Cities  
of the United States,  
Europe, Canada,  
and South America*

DALLETT presents a complete line of precision made Scaling and Light Chipping Hammers: In high speed, valveless, and light, powerful coin-valve types.

ALL feature the DALLETT Safety Chisel Retainer Bushing—designed by DALLETT to hold the chisel securely, preventing piston from driving it out of hammer.

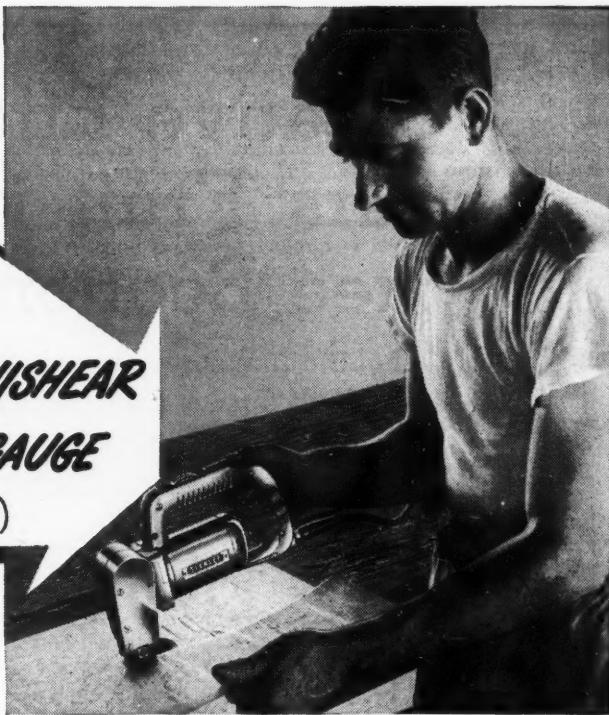
Write for  
Illustrated  
Bulletin  
Number 100

DALLETT'S RS  
Series Valveless  
type. Lever  
throttle control admits  
smooth, graduated flow  
of air . . . Exhaust air  
passes through bushing  
—blowing away chips  
or scale. The Ideal Tool  
for removing flux and  
excess metal from weld-  
ing operations.



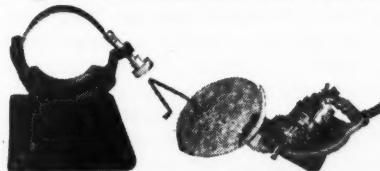
**THE DALLETT COMPANY**  
MASCHER AT LIPPINCOTT STREET, PHILADELPHIA 33, PA.  
Manufacturers of Pneumatic Tools and Accessories.

**NEW**  
**STANLEY UNISHEAR**  
**CUTS 18 GAUGE**  
**(No. 218)**



Weighs only a little more than a pair of snips. Cuts your costs on sheet metal work. Zips through 18 gauge steel at speeds up to 15 feet a minute . . . straight ahead, curves, angles, notches . . . inside or out . . . right on the line. "Feeds in" the work so operator only has to guide it. Blades easily removed

for sharpening. Aluminum alloy housing, ground gears, ball and roller bearings, slide operated switch, duplex handle. A real production tool for fast cutting of sheet metal. Sold through your industrial distributor. Write for literature. Stanley Electric Tools, 520 Myrtle St., New Britain, Conn.



**CRADLE** for converting  
the No. 218 to a rigid,  
bench power shear.

**CIRCULAR CUTTING AT-**  
**TACHMENT** for cutting  
perfect circles up to 20".

THE GREATEST NAME IN TOOLS

**STANLEY**

Reg. U.S. Pat. Off.

HARDWARE • HAND TOOLS  
ELECTRIC TOOLS • STEEL STRAPPING

# Creative Effort Bears Fruit in a Free Economy

Nearly all of the industries described here have  
been built during your lifetime by  
people like you.



R. G. LeTourneau

Tourneau. Born November 30, 1888, on a farm in Richford, Vt., Robert Gilmour LeTourneau was one of eight children of Caleb and Elizabeth LeTourneau. He left school at the age of 14 to become an iron molder's apprentice, supplementing his apprentice training with correspondence courses in mathematics and engineering. As he grew older he experimented with racing cars, developed skill in welding with the oxyacetylene torch, and operated a garage repair shop with a partner for ten years.

## R. G. LeTourneau, Inc.

**I**F a successful enterprise is the "lengthened shadow of one man" the typical American business known as R. G. LeTourneau, Inc., is the lengthened shadow of its founder—R. G. Le-

During World War I Mr. LeTourneau served as a machinist at Mare Island Navy Yard. Returning to his repair shop after the war he found his business in debt some \$5,000. In order to pay his creditors he took a farm leveling job for which he outfitted himself with a power tractor and scraper. Not satisfied with the operation of the machine, he turned to his welding experience and built a new scraper of revolutionary design. This was the pioneer job on earth moving equipment that was to later credit LeTourneau with over 150 patents in the earth moving field. It was also the embryo of the LeTourneau industry and the creation of the first machine of its kind with which one man can dig, load, haul and spread material in one complete cycle of motion.

In this year, 1948, LeTourneau found that welded structures of steel were lighter, stronger, simpler to machine and less expensive to build and operate than the riveted ones which the construction market offered at that time.

He also found that with such equipment he could reduce the cost of removing dirt for highways, building sites, dams and other forms of excavations more than 50 per cent. It was the building of this first scraper that led Mr. LeTourneau into the manufacturing field. From that time on he sold personally designed scrapers as fast as he could build them in his garage repair shop. His business grew so rap-

idly contracts for steel to make his machines he moved his plant to Peoria, Illinois. In 1944 the total sales of the LeTourneau Corporation were over \$42,000,000—a far cry from the \$100,000 plant built in 1920.

As the LeTourneau interests grew and expanded, a branch plant was built in Toccoa, Georgia, in 1938. This year also saw the development of the "Tournapull"—a two-wheeled, high-



Fig. 1—Aerial view of the plant of R. G. LeTourneau, Inc., at Peoria, Illinois.

idly that ten years later he built an all-steel welded plant in Stockton, California, and incorporated the firm of R. G. LeTourneau, Inc., for \$100,000.

Typical of most new businesses, his firm had many financial ups and downs, but within a short time he had designed a new scraper unit with pneumatic tires—another "first" in the earth moving industry. He also introduced the first power control unit with which huge machines are enabled to operate their dig-load-haul-spread cycle successfully. By 1934 LeTourneau sales had grown to nearly a million dollars, and realizing the need for more central distribution and more access-

speed, rubber-tired tractor. The use of rubber tires made it possible to drive these heavy machines over paved roads—another "first."

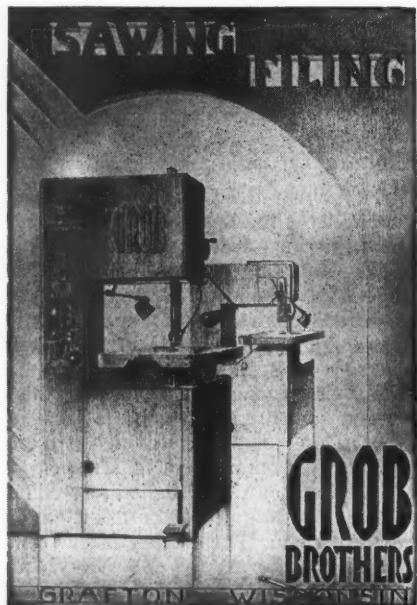
Another plant at Vicksburg, Mississippi, was begun in 1942 with the purchase of 9,000 acres of land. The war was now well under way and early in 1942 LeTourneau got priority on machinery to build shells for the government. This constituted a third site for LeTourneau operations. In Mississippi Mr. LeTourneau established a welding school for Negro cotton-field hands and rivermen. These men later built cranes for the Army and Navy and other LeTourneau wartime products.

Fig. 3—Tournadozer moving sand and mica silt for construction of a vineyard near Indio, California.



As a result of experiments in clearing forest land and milling lumber, a combination tractor-saw was developed which fells a 30-foot tree in five seconds. A 200,000 lb. capacity wood wagon for hauling trees was another innovation, followed by a 300-foot crane for lifting steel from river barges.

In the summer of 1941 LeTourneau joined with an Australian engineer on a 75-25 per cent basis to build a plant in New South Wales, Australia, to be known to LeTourneau (Aust.) Pty., Ltd. This subsidiary supplies New Zealand, Dutch East Indies and India.



Early in 1945 LeTourneau took over a building which had been used as a general hospital for Army veterans at Longview, Texas, and founded an accredited school to foster his theory of "learning while earning." The new institution was called the LeTourneau Technical Institute of Texas, the primary objective of which is to provide practical training for modern mechanics, technicians, and skilled craftsmen. An anti-climax to the founding of LeTourneau Tech was the development of the Tournalayer — "a machine that lays a concrete home within 24 hours." In addition to work for its plant employees, LeTourneau furnishes a career for heavy earth moving and lifting equipment dealers in every state in the Union, Canada, Central and South America and overseas. Thus the little garage repair shop in Stockton, California, gave to American industry a man who has become a national figure in engineering fields.

**Imported—SWISS  
Collets and Carbide Bushings**

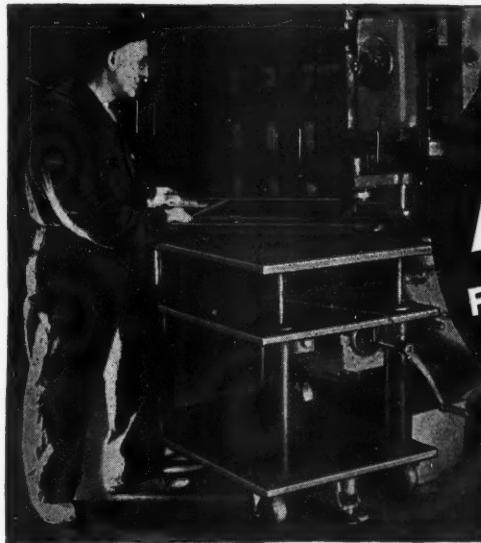
**FOR SWISS TYPE  
SCREW MACHINES**

Most fractional sizes shipped from stock.

**G and D Sales Co.**

111 Dillerville Road

Lancaster, Pa.



## INSTALL PORTELVATOR

*Hamilton Portable Elevating Table*

## AND CUT PRODUCTION COSTS

Stop idle machine time! When weight must be moved, send one man, and Portelvator.

Raises, lowers, transports, levels and supports overhanging work. Forms a work bench when and where you need it. May be worked at from all sides. One man can safely lift and carry loads usually requiring the combined strength of four.

Three table surfaces. Four point support. Fast lift and slow lift mechanism. Self locking at any height. Will not tip or slip. Positive floor lock.

Standard model capacities 1,000 to 5,000 pounds. Special models designed and built on order. Write for Bulletin P-47.





N. A. Woodworth

## N. A. Woodworth Company

DURING the late, sloshy winter of 1940, a group of Ferndale City officials stood uncomfortably in a vast swampy field and listened skeptically to a clear-eyed energetic figure paint word pictures about a great industrial plant to be built on the unseemly land.

There was a swamp to be drained, roads to be built, increased transportation for employees, greater home facilities for men and women workers and other necessary developments to establish a manufacturing concern. During the months to come these same officials watched incredulously as this industrial plant expanded from 25 employees to 50, to 1000, to 2000, to 4000, and finally 6000 men and women producing precision aircraft engine parts.

This newcomer to Ferndale was N. A. Woodworth—no newcomer to industry. A veteran of some 37 years in the manufacturing field, Newton A. Woodworth had a wide experience in industry before he formed his own company. Born in Ft. Wayne, Indiana, he was graduated in Engineering from Ohio Northern University. He was later a machine shop foreman with the General Motors Truck Corporation, a department head with Hudson Motor Car Company, and assistant superintendent of the Small Tools Department in the plant of the Ford Motor Company. While with Ford he established and managed the Aircraft Division which was an important industry during the first World War. A strong believer in teamwork, Woodworth had his first taste of the necessity of training new workers in the technique of machine production during World War I while he was with the Ford



View of N. A. Woodworth plant, Ferndale, Michigan.

# A NEW COOLANT -

## AHCOWET CG

takes the heat off  
metal cutting problems

CO

### LONGER TOOL LIFE

Ahcowet CG applies a new principle to water emulsions for reducing heat and friction in metal and plastic operations. A product of New England's oldest industrial chemical company. Tested and proven in some of America's largest industrial plants.

SEND FOR INFORMATION



HIGHER  
SPEEDS



HEAVIER  
CUTS

ARNOLD, HOFFMAN & CO., Inc.

Machine Tool Division

55 Canal Street, Providence 1, R. I.

Please send me information about Ahcowet CG

Name \_\_\_\_\_

Firm \_\_\_\_\_

Address \_\_\_\_\_

Motor Company. The ideas which he conceived then have remained with him through the intervening years and contributed no little to the success of both the Ex-Cell-O Corporation and his own company.

After the end of the first World War Woodworth became a salesman for Ex-Cell-O Manufacturing Company, which was then a small shop in Detroit manufacturing a newly developed high-speed grinding spindle. Under the inspiration of his driving force the small shop soon outgrew its quarters and was forced to take larger space in a more modern building. As a result of his engineering ability, practical knowledge of machining and manufacturing operations and salesmanship ability, Woodworth became the head of the firm, which was then incorporated. As President of the Ex-Cell-O Corporation Woodworth's ability as an organizer soon made itself manifest and in rapid succession the corporation built a huge new plant for the

parent company and acquired several additional plants.

In 1937, at the height of his success as President of a great corporation employing many thousands of people and manufacturing a wide variety of precision machine tools, small tools and mechanical parts, Woodworth retired. In 1939, restless and eager to get back into harness, Woodworth began his plans for the new plant to be erected in Ferndale.

During World War II the N. A. Woodworth Company became the largest producer for precision aircraft engine parts for the Wright Aeronautical Corporation and its licensees. During this period his company introduced with great success and is continuing to manufacture precision fixed limit gages, adjustable gages, thread ring gages, patent cone-lok jigs, diaphragm chucks, special precision tools and precision machine parts. The company pioneered and developed new products and material which have contributed to increased operating efficiency and lower manufacturing costs, such as gages of cast Stellite alloy, the Limitrol, which is a comparator type snap gage, and a special processed alloy known as Nawlide.

Keeping with him the key men who helped to blaze the trail for the Woodworth Company's amazing war production record, Woodworth is presently concentrating his plant facilities on the manufacture of these precision gages, jigs and diaphragm chucks. Here, again, is the story of a dream, the fulfillment of which is only possible in an atmosphere of freedom—a dream which in this case found its fulfillment in the building of industries which have afforded employment to thousands of skilled workers and which has contributed immeasurably to America's wealth in the form of millions of highly engineered precision parts and thousands of precision machines and tools for the production of other fine commodities.

**GILMORE**  
**DIAMOND BORING TOOLS**



The diamonds in these tools are carefully chosen under strong magnification to make certain they have inherent qualities that render long boring service. Write for data book on diamonds for Turning, Boring, Testing.



**F. F. GILMORE CO.** 285 Columbus Ave.  
Boston 16 • Mass.  
Diamond-Boring, Turning, Facing, Engraving,  
Truing Tools, Styls, Gage Contacts.

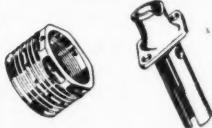
# Woodworth Engineered Products

## PRECISION GAGES

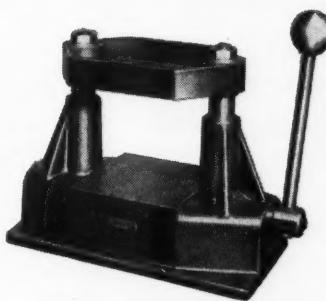


Woodworth manufactures a complete line of thread ring and thread plug as well as cylindrical plug and ring gages. Also produce special gages to customer blueprints.

## PRECISION PARTS



N. A. Woodworth engineering gives you plus value in precision parts. Production men with "know how" combined with well equipped plant are pace setters in aircraft engine and radar assembly fields.

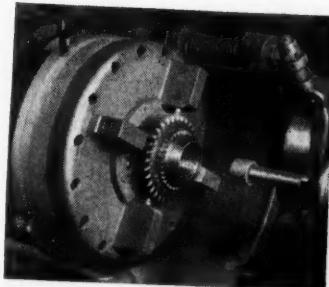


## CONE-LOK JIGS

Woodworth Cone-Lok Jigs are noted for their mechanical simplicity and "life-time" construction.

## DIAPHRAGM CHUCKS

Chucks engineered and built by Woodworth guarantees the ultimate in precision gear chucking.



ACCURACY YOU CAN TRUST

# WOODWORTH

N. A. WOODWORTH CO., 1300 EAST NINE MILE ROAD • DETROIT 20, MICHIGAN  
COMPLETE LINE OF PRECISION GAGES • DIAPHRAGM CHUCKS • CONE-LOK JIGS



Fred L. Maytag II  
President, the Maytag  
Company

"four ambitious men, a workable idea, \$2,400 in capital and an abundant fund of confidence in the future of America."

Fred L. Maytag, as a farm youth of 16, was placed in charge of a threshing outfit which he operated for a number of years. He took his turn at feeding the bundles into the threshers and along with the others ran the risk of having his hands lacerated by a careless or inexperienced band cutter. Thus he realized the importance of a device that would eliminate this hazard. Some time later while engaged in the lumber business in Newton, Iowa, he assisted G. W. Parsons in the first test of a band cutter and self feeder attachment for threshing machines, and in February, 1893, the Parsons Band Cutter and Self Feeder Company was incorporated with a capital of \$2,400. The four men who comprised the firm had at last solved the problem upon which threshing machine manufacturers had spent tens of thousands of dollars and had failed. Within a few years the Parsons Band Cutter and Self Feeder was used on threshing machines built by 28 different concerns.

As the years went on the company developed a corn husker and shredder,

# The Maytag Company



Fred L. Maytag  
Founder of the Maytag  
Company

an improved self feeder, and other farm accessories. In 1909 the name of the concern was changed to the name of the man who headed it; thus it became the Maytag Company. In the two years previous to 1909 the company had been experimenting with a mechanical clothes washing machine. The first machine was operated by means of a rotary handle attached to a fly-wheel, and the next year a pulley mechanism was added so that the washer could be operated by a belt from an engine. In 1911 the electric motor was applied to the washer, making it possible for the home-maker to attend to other tasks while the machine did the laundry chore. For farm homes not equipped with electricity, a  $\frac{1}{2}$  H.P. gasoline engine was designed which operated the washer in the same manner as the electric motor. The Maytag washer with the gasoline engine for power has been sold to more than one million users.

From that time on up to the present day Maytag washers have been improved at every opportunity and the Maytag line has been expanded to include many other power-operated household conveniences.

Fred L. Maytag passed on in 1937, but the policies and principles established by the founder for the conduct and operation of this company are still maintained by the present company President—Fred L. Maytag II. As a

ANOTHER  
Plus  
FEATURE

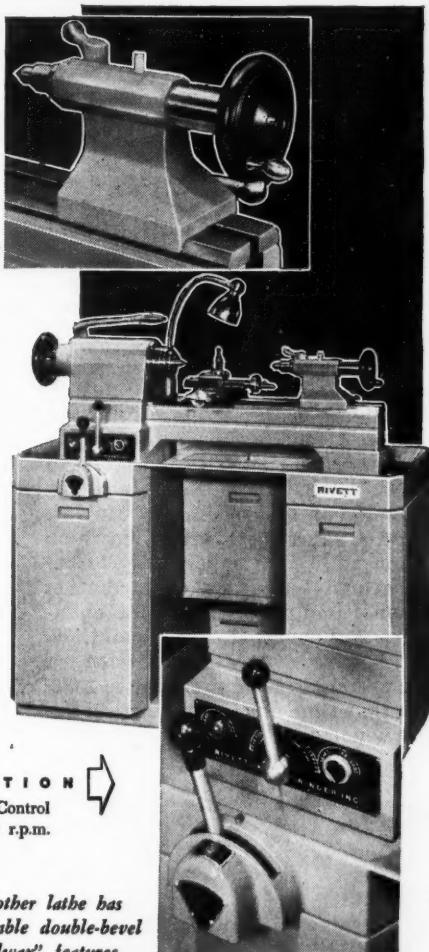
THE New RIVETT 918  
"STEELWAY" CABINET LATHE

**DOUBLE-BEVEL WAYS  
AND MAXIMUM  
BEARING AREA!**

See the hardened and precision-ground steel bed with double-bevel ways for alignment. In combination with the wide top surface they provide maximum bearing area for slide rest shoe and tailstock. The self-centering action of the double-bevel ways safeguards tailstock from wearing away from cutting tool out of alignment.

Double-bevel ways assure against the inherent weakness of any type of bed which depends upon front bearing only for alignment. In such construction wear is lateral against a narrow bearing area and away from cutting tool which makes for taper turning between centers. This out of alignment also produces off-center (oversize) drilling and reaming.

On double-bevel ways the tailstock may be operated in conventional fashion, slid at will along the bedways and locked in desired position by slight finger touch on the eccentric binder. Binding force is self-centering and downward against a large bearing area.



**SPINDLE SPEED SELECTION**

Correct spindle speed for any operation. Control lever affords any speed from 90 to 3700 r.p.m.  
Selected speed shows on dial.

WRITE FOR BULLETIN 918SL

No other lathe has  
comparable double-bevel  
"steelway" features.

**RIVETT**

**RIVETT LATHE & GRINDER, INC.**

BRIGHTON BOSTON MASSACHUSETTS U. S. A.

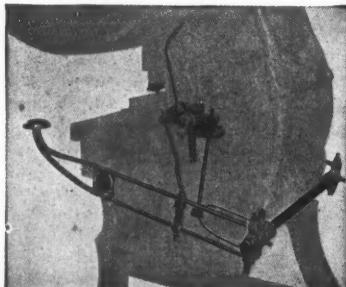


Aerial view of the Maytag factory, Newton, Iowa. The plant contains 800,000 sq. ft. of floor space and employs 2,500 people. The capacity of the plant is approximately 2,000 machines per day.

boy of 16, young Fred worked during the summers in the Maytag Company shops as a machine operator on the various jobs. In the fall of 1934, some months after graduating from the University of Wisconsin, Mr. Maytag joined the sales organization, in which position he had an opportunity to become acquainted with the distribution personnel and problems of merchandising. Returning to the plant he shortly took over the direction of sales, becoming vice president in 1936. From that time until he became President, which was in October 1940, he spent half his time in the office and

the other half out in the field. Under the direction of this third generation representative of the Maytag family, an excellent organization spirit has been developed in the Maytag plants. Mr. Maytag, the other officers of the company, and the members of the shop organization are all neighbors, and the plant workers realize that they can prosper only as their company prospers.

The story of the Maytag Company is another story of a man with a dream; a man who had the vision and was willing to make the effort to see his dream come true.



## SAFETY EQUIPMENT FOR POWER AND FOOT PRESSES

Combination Gate and Barrier Guards  
Two-Hand Safety Starting Devices,  
Sweep Guards . . . Single-Stroke Attachments  
Stock Reels . . . Fly Wheel Guards, etc.

*Write for Details*

**JOHN HUMM SAFETY EQUIPMENT CO.**

251 SHEFFIELD AVE.

BROOKLYN, N. Y.

**JOHNSON  
BRONZE**

## SLEEVE TYPE BEARINGS



# Ready to SHIP Ready to USE

● Delays are unnecessary in securing bronze bearings. Simply call for Johnson General Purpose. From our more than 850 sizes you select every item you need. We ship your order the same day it is received. Every bearing is completely machined . . . ready for immediate installation. Cast in the highest quality bronze alloy to give you the utmost in performance. Write for a new catalogue TODAY.

**JOHNSON**  
SLEEVE BEARING  
590 S. MILL STREET



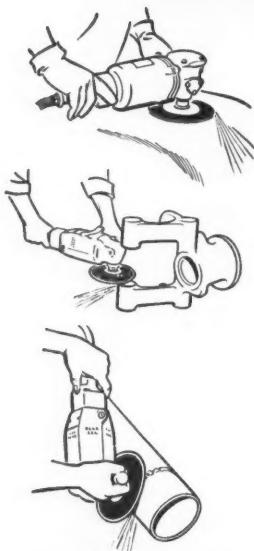
**BRONZE**  
HEADQUARTERS  
NEW CASTLE, PA.



"Come, now, Ferdinand! I know that Armourclad Disc makes your work easy, but that doesn't mean you should take off on a mental cruise."

## ARMOURCLAD RESIN FIBRE DISCS

For Faster, More Productive Metalworking



Actual production tests have proved that this new disc *cuts faster*. This greater initial rate of cut lowers production costs, reduces labor costs.

The new Armourclad Resin Fibre Disc cuts *faster longer* because its special resin bond gives better grain adhesion—greater resistance to heat and humidity.

Better for all disc operations, the new Armourclad Resin Fibre Disc gives faster, more productive metal working—is especially good for severe grinding jobs.

We recommend buying through  
your Industrial Distributor



## ARMOUR and Company

*Coated Abrasives Division*

1355 WEST 31ST STREET • CHICAGO 9, ILLINOIS

# Install Ross-In-Line for a Full-Flo Line!

THIS  
NOT THIS

## Full Pipeline Capacity

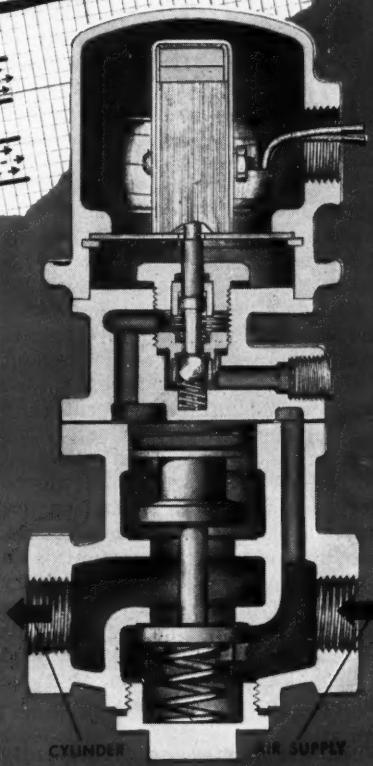
with lower initial and operation costs...

Yes, these new Ross-In-Line valves fit the bill—a dozen ways in every plant. Solve your "on-and-off" problems, instant shut-off for plant-wide systems—a single coolant line—or split second control of a single acting cylinder. These air-controlled valves handle pressures 0 to 125 p.s.i.—air, liquid, and gas. Do it better, too, yet at lower cost.

### Here's Why...

- **FULL LINE CAPACITY**... Full flo design provides full pipe size opening throughout valve. Eliminates "pinching" of line, reduces friction loss.
- **LOWER FIRST COST**... More capacity—therefore more efficiency per dollar. Quick, easy, straight line installation. No mounting brackets.
- **LOWER OPERATING COST**... Only four moving parts, all non-corroding. Inspection without removing from line. Solenoid consumes only .2 amps. holding and 1.2rush at 110 v. 60 cy. Interchangeable pilot section simplifies service, decreases inventory.

Designed and built to stand up, seals are Nycar, other parts naval brass and stainless steel. Created specifically for efficient air operated control, straightway and 3-way, normally open or closed,  $\frac{1}{4}$ " to  $\frac{3}{4}$ " FULL FLO pipe capacity. As a dependable answer to your valve problems, Ross offers this latest addition to a line of over 300 quality valves designed for every phase of air control. Write for details and name of Ross representative in your area.



Solenoid-Pilot Sections  
Interchangeable on all 16 Ross  
In-Line Bodies.

**ROSS**



THE BRIDE FOR  
AIR HORSEPOWER

# ROSS OPERATING VALVE CO.

120 S. Golden Gate Avenue, Dept. 152

Detroit 1, Michigan



Glenn L. Martin

**I**N 1892 a six-year-old boy in the little town of Liberal, Kansas, learned how to build and fly box kites more successfully than any other boy in the neighborhood. What's more, he discovered a market for them and began his first production line on the floor of his mother's kitchen. The charge was 25¢ per kite.

The six-year-old boy was Glenn L. Martin. From that time on throughout his lifetime there was never a time when he wasn't interested in sails and lifting surfaces. He fitted a sail to his toy wagon, and in the wintertime fashioned a sail with which he moved faster and with less effort on ice skates when the wind was favorable. He also did some delicate navigation on his bicycle with a sail for auxiliary power. All of this experience with the vagaries of the wind crystallized in his mind in later years when he developed the unshakable conviction that he could build and fly a man-carrying airplane.

When the Martin family presently moved to Salina, Kansas, the boy worked in a bicycle shop while attending high school and while taking a two-year business course in a local college he promoted himself a job as a garage hand with the first automobile business to open in that town. In 1905 the family moved to Santa Ana, California, where Glenn started a garage of his own. It was about this time that he read of Orville Wright's flight at Kitty Hawk, North Carolina.

## Glenn L. Martin Company

The first steps in the direction of realization of his desire to fly consisted in building a biplane glider which he practiced gliding from the hills near Santa Ana. But only after he felt completely at ease in his giant kite did he rent an abandoned church and begin construction of a biplane with a motor and a propeller.

There were no textbooks for reference; no blueprints or past experience to guide him. Everything he did was experimental. Working during the day as an automobile salesman and repairman, he labored at night on his airplane, aided by light from a kerosene lamp held by his mother, who had complete faith in his objectives from the start.

After two years of work at a cost of more than \$2,000, Glenn Martin's first aircraft was ready for flight. Finally in August 1909 he made his first flight covering 100 feet at a two-foot altitude. Little by little he increased the altitude of his hops until he reached 15 feet and stretched the distance flown to 100 yards. Not until the summer of 1910 did young Martin begin to feel satisfied with his plane and in November of that same year his first advertised exhibition flight took place at Santa Ana. Newspaper accounts of the flight attracted large crowds to Santa Ana, the plane was put on exhibition, tickets were sold and several hundred dollars were raised, which Martin used as a nest egg toward building his second plane. The next year he and his aircraft were in great demand at county fairs and local celebrations.

By 1911 Glenn L. Martin became one of the best-known fliers of the entire

country through his barnstorming throughout the west. He was the first to deliver mail by plane; first to deliver newspapers by plane; he bombed a sham fort by plane; used his flying machine to hunt coyotes, to hunt escaped convicts, to pick up a passenger from a boat, to search the ocean for lost aviators, and first to take motion pictures from a plane. In 1912, at an international meet in Chicago, he won

Martin aircraft were in such demand that it was forced to seek larger quarters. In 1929 Martin moved his business in its entirety to a 1,260 acre tract at Middle River, Maryland, which is 12 miles from Baltimore. Speaking before a civic gathering, Mr. Martin predicted that within a few years he would be utilizing the services of 10,000 employees. During World War II employment totals exceeded 50,000.



Plant of Glenn L. Martin Company at Middle River, Maryland. The plant covers 1,035 acres and has 2,725,000 sq. ft. of floor space.

more events than any other entrant and collected prize money amounting to \$4,854. That same year he moved his factory to Los Angeles and started a flying school in which many future leaders in aviation were trained.

Foreseeing the entrance of the United States into World War I, he merged his own interest with those of the Wrights in 1917 and formed the Wright-Martin Aircraft Corporation. However, the new organization was short-lived and with financial aid from a group of Cleveland capitalists, Martin again organized his own company. At the end of World War I Martin bought out his associates and became the sole owner of his business.

Under his administration the business flourished and in a few years

Under Martin's counselling, the company in recent years began research in other fields. As a result, a plant for the production of a vinyl type synthetic resin has been built at Painesville, Ohio. There a plant for the production of waterproof sheets made of cloth or paper sandwiched between and firmly bonded to thin sheets of aluminum, stainless steel, wood veneer or plastic has been constructed. Today the Glenn L. Martin Company is launched on a program of passenger and cargo plane construction. Today many of Martin's greatest competitors are some of his old employees. Glenn Martin, himself, is one of the few pioneer fliers of America who is guiding the destinies of his own company.

# The Story of the Freuhauf Trailer Company



Top—Main offices and Detroit plant of  
Freuhauf Trailer Company  
Center—Harvey F. Freuhauf  
Bottom—The blacksmith shop in which the first  
Freuhauf trailer was built.

FROM a little blacksmith shop on a side street employing seven people, to a huge corporation with nine factories and nearly 100 branch outlets employing nearly 8,000 people, is an amazing story of growth in a little over 30 years. That is the story of the Freuhauf Trailer Company—the world's largest builder of truck trailers. Yet this story is no more amazing than is the story of the man behind the firm; the man who might be given a large share of credit for the growth of the entire motor transport industry—Harvey C. Freuhauf, founder and President of the company that bears his name.

Harvey Freuhauf's parents were pioneer Detroit stock. Harvey's father attained quite a local reputation as a skilled blacksmith and wagon maker and in his shop produced many of the wagons and carriages sported by some of early Detroit's leading citizens. But while Harvey was still a schoolboy the increasing popularity of the automobile sounded the doom of the horse and wagon. With the advent of the motor truck, the family's chief source of income began to shrink and while still in the ninth grade, Harvey left school to work in a foundry. However, he enrolled in night school and after working ten hours a day sat up half the night studying accounting. His wages at that point in his career were 10c an hour. A little later Harvey joined his father in the blacksmith shop.

It was about this time that a Detroit lumber dealer who had long been a customer of his father purchased a 1914 Model-T Ford and came to the shop to see if any way could be devised to convert his new roadster so that it

# FOUR GOOD TOOLS By **FALCON**



GAGES • REAMERS  
END MILLS  
COUNTER-BORES  
SPECIAL TOOLS  
MILLING CUTTERS  
FORM RELIEVED CUTTERS

## **FALCON TOOL CO.**

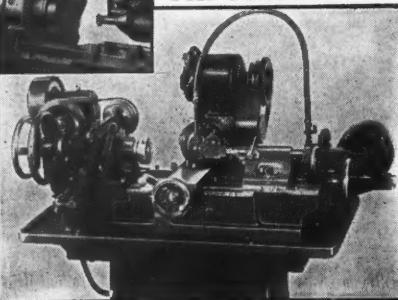
12507 GREINER . . . DETROIT 5, MICH.

WE ARE LOOKING FOR ADDITIONAL DISTRIBUTORS

WIRE FOR DETAILS AND DELIVERY DATA—  
WE'LL GIVE YOU QUICK ACTION!



## WALTHAM Thread Miller



Pinion and Gear Cutting Machine, Thread Milling Machine, Cylindrical Sub-Presses, Cutter Sharpening Machine, Small thread milling and gear cutters, Small special machinery.

**Write for illustrated bulletin.**

**WALTHAM MACHINE WORKS**  
**WALTHAM**

could be used to carry lumber. That was when Harvey conceived the new application of an old fact—that a horse can pull more than it can carry. He interrupted the discussion between the older men with the question "Why not build a wagon that your roadster can pull like a horse?" That day was actually the birth date of the modern highway transport industry.

Other merchants, noting the advantage of the new truck wagon, came to Freuhauf and demanded that he build them units just like it to pull behind their automobiles. Harvey, aware of the trend to heavier hauling motor units, decided the time was right to open a shop devoted entirely to the manufacture of these new truck wagons.

In 1916 the Freuhauf Trailer Company was formed and began advertising its custom-built trailers, and in 1918 the company was incorporated. Today, still a comparatively young man, Harvey C. Freuhauf heads an organization with an annual gross nearing one hundred million dollars. From the little blacksmith shop in which the company was started, the Freuhauf Trailer Company has grown to its present size with nine modern factories. Serving America's merchants and industries, here is a great organization which is, in truth, the "lengthened shadow of one man."

## LOUVRES BY *Littleford*

If newly designed units need Louvers to supply ventilation for motors or engines or your present machines need ventilation for better performance, Littleford can produce these Louver Covers at an amazingly low cost. If you have a problem involving Louvers, send blueprints to Littleford; see how you too can save on this intricate work.



**LITTLEFORD**

LITTLEFORD BROS., Inc.  
433 E. Pearl St., Cincinnati 2, Ohio

### LOW SET — LARGE CAPACITY

#### PALMGREN Swivel MACHINE VISE



Designed to meet a big demand for a rugged swivel vise at a reasonable price. Accurately machined of finest material and  
No. 410, 4" Only \$22.50  
No. 610, 6" Only \$42.50

GUARANTEED. Steel Jaws ground, one plain and one grooved vertical and horizontal for holding round pieces. Acme thread adjusting screw. Swivel Base is accurately graduated 90°, clearly cut and easy to read. **Write for Circular No. 12.**

**CHICAGO TOOL and ENGINEERING CO.**  
8399 South Chicago Ave. Chicago 17, Ill.

# R-B INTERCHANGEABLE PUNCHES and DIES

*Proved*  
BY YEARS  
OF USE



## *in DIE-BUILDING . . . in PRESS OPERATION*

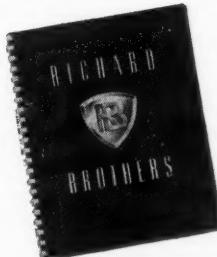
Die-makers and press operators everywhere understand the application and use of R-B Interchangeable Punches and Dies—because, for years, these products have been "standard" in the metal-working and plastics industries. As a result, man-hours and money are saved in die-building . . . and press operators have learned how to install and remove them quickly and easily *in the press*, reducing press "down-time" to a minimum. Used exclusively in many plants, they provide a sure solution to simplified inventories of punches and dies.

R-B punches and dies of standard sizes,

shapes and materials are carried in stock for immediate delivery. Special punches and dies are made promptly to your specifications.

### **... and CHECK THESE R-B ADVANTAGES**

- ✓ Simple in design and construction.
- ✓ Unlike most parts used in die construction, R-B products have a salvage value.
- ✓ Securely locked both vertically and radially yet instantly removable.
- ✓ Selected steels with hardness controlled and finished to very close tolerances insure uniformity.
- ✓ Quickly and accurately assembled in die construction.



*Get the  
WHOLE  
Story*

*in this free catalog.*  
*A 48 page book containing full information on Allied's "one stop service." Write for your copy.*

## **ALLIED PRODUCTS CORPORATION**

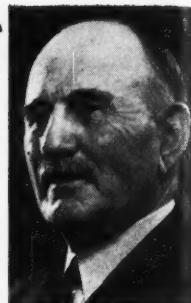


Department 24 • 4624 LAWTON AVE. • DETROIT 8, MICHIGAN



George W. Mason

# Nash-Kelvinator Corporation



Charles W. Nash

**T**WELVE-year-old Charles Nash skipped church on Sunday, July 5, 1874. That was the day he had chosen to run away. When Farmer Lapworth, to whom the boy had been "bound out" since he was six years old, stood beside the family carriage calling him, Charles was hiding in the woods. He watched the carriage disappear down the road, then ran into the house to collect his handful of belongings. Not many men have achieved success with a more difficult beginning than Charles William Nash.

After walking 15 miles Charles stopped at a farm near Grand Blanc, Michigan, where he obtained a job at \$8.00 a month. Three months later he obtained a better job at another farm at \$12.00 a month and while still working on the farm he learned the carpentry trade from a local mechanic. At the age of 18 he received his first mechanical training while operating a portable steam hay presser.

By 1890 Mr. Nash had acquired a wife and in that year the couple moved to Flint where he obtained a job with the firm which later became the Durant-Dort Carriage Company. Within six months Nash was superintendent of the plant.

In 1904 Nash joined with David L. Buick to acquire the old Imperial Wheel Works at Jackson, Michigan, and went into the business of building automobiles. The business was later moved back to Flint and in 1910, upon the organization of the General Motors

Company, Nash was appointed President of Buick Motor Company. Within two years after entering the automobile business Nash headed not only Buick but also the Oakland Motor Company, Olds Motor Works and General Motors Truck Company, and in November, 1912, was elected President of General Motors Corporation.

In 1916 Nash resigned as President of General Motors to go into the automobile business for himself. He bought the stock, assets and business of the Thomas B. Jeffery Company, Kenosha, Wisconsin, and in the fall of 1917 the first Nash-designed car appeared on the market. In 1918 Nash became the largest producer of trucks in the world, building 11,490 of the famous Nash four-wheel-drive Quads for the U. S. Army. Subsequently Nash purchased a half interest in the Seaman Body Corporation of Milwaukee and purchased the LaFayette Motors Corporation trade name and business which he merged with the Nash Company. In 1925 Nash added to his plant facilities by purchasing the plant of the defunct Mitchell Motor Car Company of Racine, Wisconsin.

In 1936, at the age of 72, seeking strong leadership for his business, he asked George W. Mason to become President of Nash Motors. Being President of the Kelvinator Corporation, Mason declined, but negotiations finally resulted in the merger of Nash and Kelvinator.

George W. Mason saw his first mo-

# "RIGHT TO THE POINT"

for economical precision production



SCULLY-JONES  
CENTERS

**Dollar Savings - and the success of the job** often "turn" on using the right kind of a Center in your Lathes, Grinders, Hobbing, Hand Screw or Special Machines.

When you use Scully-Jones Centers you get accuracy and long life, because, in all sizes, they are ground to tinier-than-a-pin-point concentricity of .0002"—and are scientifically heat-treated. You can re-point them many times, because there is ample projection beyond the size line.

You get extra long life with Scully-Jones Solid High-Speed Steel Centers because they are made from Tungsten H. S. Steel (18-4-1 analysis), heat-treated to 63-64 Rockwell "C".

### IMMEDIATE DELIVERY

You can get immediate delivery at reasonable prices on all popular sizes.

You can safely re-point our Tipped Centers as they have large brazed inserts. You get less burring and nicking because their shanks are 8641 Steel, carefully heat-treated for toughness.

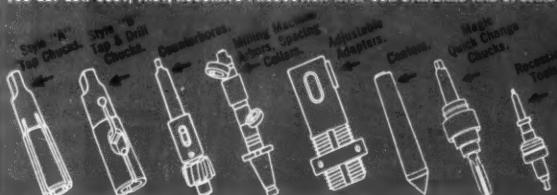
Equip your machines now with these Scully-Jones Centers that will meet all your requirements: (1) Tungsten Carbide Tipped Centers (2) Stellite Tipped Centers (3) Solid High-Speed Steel, Plain and Half Centers (4) Carbon Steel Centers (5) Special Centers made to your requirements. Furnished with Morse, Jarno or Brown & Sharpe Tapers in all popular sizes.

For complete information refer to pages 302-307 of Scully-Jones Tool Engineering Manual 500 and discount sheet.

**FREE Valuable Chart**  
showing center dimensions for light and heavy work. Write today for your free copy; no obligation.

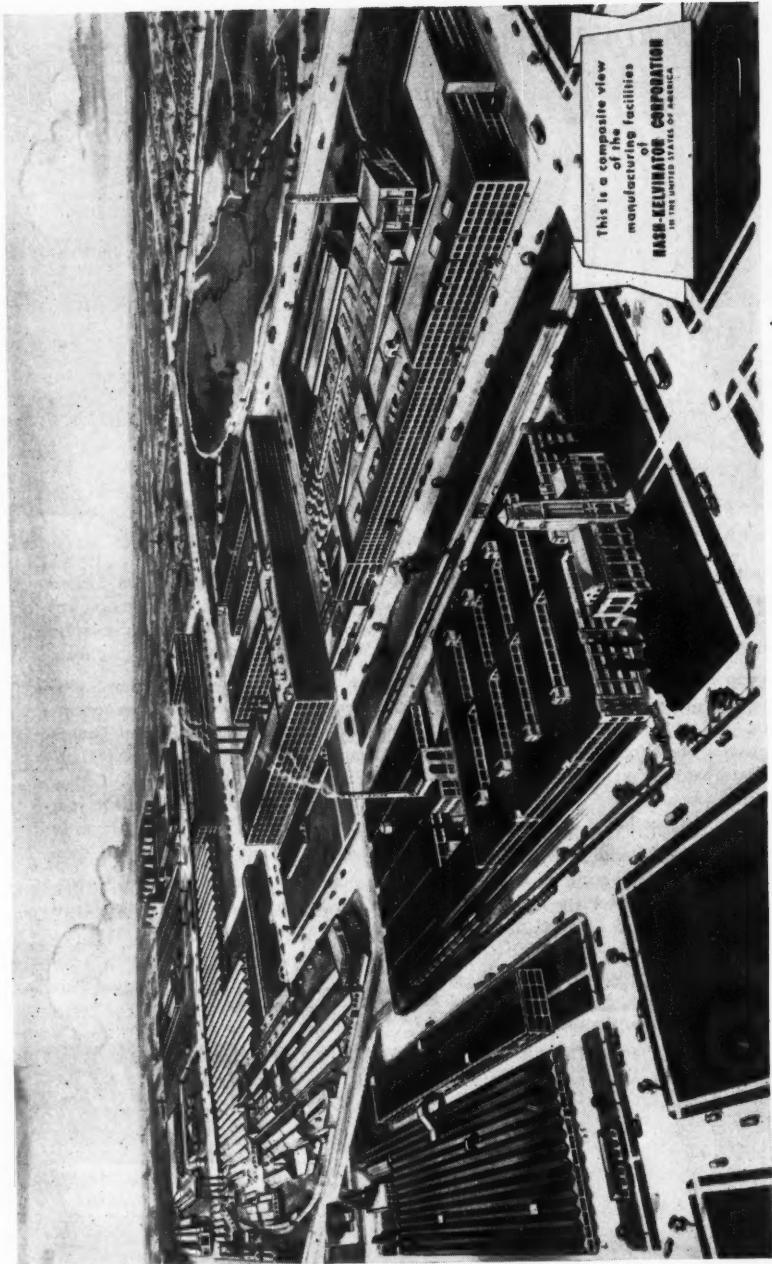
R 2674 NMS

YOU GET LOW COST, FAST, ACCURATE PRODUCTION WITH OUR STANDARD AND SPECIAL TOOLS



**Scully-Jones**  
AND COMPANY

1909 S. ROCKWELL STREET  
CHICAGO 8, ILLINOIS



This is a composite view  
of the  
manufacturing facilities  
**NASH-KELVINATOR CORPORATION**  
IN THE UNITED STATES OF AMERICA

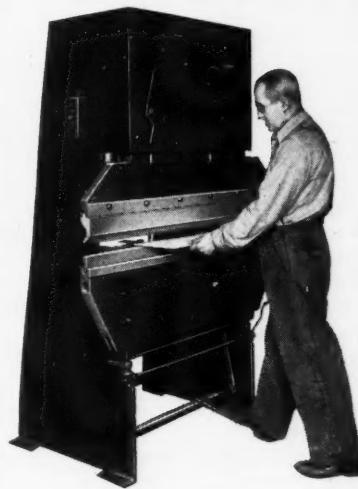
Composite view of manufacturing facilities of Nash-Kelvinator Corporation. Center foreground, Detroit plant and main offices. Upper left, Nash-Kelvinator Plant. Lower left, Nash-Milwaukee Parts Depot. Upper center, Nash-Milwaukee Body Plant. Upper right, Nash-Kelvinator Grand Rapids Plant. Lower right, Nash-Kelvinator Proving Ground. Racine Proving Ground.

tor car in 1904 on the streets of Valley City, North Dakota, where he was born March 12, 1891. From that time on everything pertaining to automobiles and motorcycles interested him so greatly that he became a helper to the mechanic at the local garage after school without pay. Later he was given a full-time job working in the shop in the forenoon and spending the afternoon of each day demonstrating cars to prospective buyers and teaching new owners how to drive. In 1909 Mason entered the University of Michigan and while in college he operated a distributorship for the Briggs-Detroit automobile. During this time he met W. R. Wilson, then assistant to the general manager of the Studebaker Company, and when he finished college Wilson hired him. In 1914 Wilson became associated with the Dodge Brothers Company, where Mason later joined him and acquired the production and purchasing experience which was invaluable to him in later years.

During World War I Mason supervised production of many items of material for the Army Ordnance Department and in 1921 Wilson again summoned him into the automobile industry, this time as his assistant in the Maxwell organization which was then being reorganized by the late Walter P. Chrysler. In 1924, when the Chrysler Corporation was formed to succeed Maxwell, Mason became works manager. Two years later, when mechanical household refrigeration was developing in popularity, Mason left Chrysler to become vice president of Copeland Products, Inc., then a leading manufacturer in this field. Elected President of Copeland in 1927, he resigned in 1928 to become President of Kelvinator Corporation—and he was still only 38 years old. In 1936 Charles W. Nash offered Mason the presidency of Nash Motors, which opened negotiations which finally resulted in the merger of the Nash and Kelvinator

## CHICAGO STEEL PRESS BRAKE

Model No. 131



A new member of the Chicago Press Brake family designed to supplement the larger machines.

Within its rated capacity (11 tons) all operations are handled same as on the larger machines.

All steel construction, enclosed gearing.

Takes up small floor space.

We can make excellent deliveries of this new press.

We make complete line of dies for all Press Brakes.

Send for Bulletin 131 for  
further description

**DREIS & KRUMP MFG. CO.**

7418 LOOMIS BLVD. • CHICAGO 36  
ILLINOIS

Companies discussed earlier in this story.

The careers of these two men—Charles W. Nash and George W. Mason—are typical of the successes that have been achieved by hundreds of Americans. Such successes are impossible in lands where one can work only

at the job that is allotted to him, where no man may leave his job to take another without the approval of government officials in some higher strata of existence, and where any person who moves from one place to another immediately becomes a suspicious character to the secret police.

## WE, THE PEOPLE

**A** STORY told by Burnett Hershey, author and war correspondent, is making the rounds in Washington. Even collectivist-minded individuals admit it's good, although it razzes the Soviet system. It goes this way:

An American labor delegation visited the Skoda works in Czechoslovakia. The Americans asked: "To whom does this factory belong?"

"We, the people, own it," said the guides.

"Who owns the machinery?" asked the Americans.

"We, the people, own it," the guides answered.

"Who gets the profits?" the visitors demanded.

"We, the people get them," was the reply.

Then the Americans saw three large cars parked nearby, and asked who owned them.

"One is owned by the commissar for defense, the second belongs to the chairman of the workers' committee, and the third to the representative from Moscow, who is visiting here," the guides told them.

Then a Skoda delegation arrived in America to tour industrial plants. An American labor leader showed them the Ford factory.

"Who owns this factory" the visitors asked.

"Mr. Ford does," said the American.

"Who owns the machinery?" they demanded, and were told Mr. Ford owned it.

"Who gets the profits?" the Skoda men continued.

"Mr. Ford does," said the American.

Then the visitors saw 30,000 cars parked in a nearby lot, and asked: "Who owns all those cars?"

The American grinned. Then he said: "We, the people, own those cars."

**S & S HINGES**  
VARIOUS WIDTHS  
and GAUGES

**BUTTS AND CONTINUOUS LENGTHS**

WRITE FOR PRICES

**S & S MACHINE WORKS**  
4533 W. LAKE STREET HARDWARE DIVISION CHICAGO, 24, ILLINOIS

For  
**GUARDS**  
**CABINETS**  
**CASES**  
**BOXES**

Gutenberg examining the first paper to  
be printed with movable type — about  
the middle of the 15th century.



## KOOLPORE® was unheard of then!

Yes, there was no word about KOOLPORE grinding wheels on the first paper to be printed with movable type, but today there's plenty of good words about KOOLPORE — both in print and throughout the industry.

These BAY STATE abrasive products, with their large pore spaces, are giving an outstanding performance on countless SURFACING and TOOL and CUTTER JOBS that require extra coolness of cut, and fast, heavy removal of metal.

Here's 5 features that make KOOLPORE grinding wheels superior:

- 1 — Faster Cutting
- 2 — Cooler Cutting
- 3 — No Chip Jam
- 4 — Greater Clearance
- 5 — Increased Production

Write for Koolpore folder which includes specifications.  
Branch Offices and Warehouses — Chicago — Detroit  
Distributors — All Principal Cities

**BAY  
STATE®**

*Top Performance Consistently Duplicated*  
**BAY STATE ABRASIVE PRODUCTS CO., WESTBORO, MASSACHUSETTS, U. S. A.**



Walter A. Geist

# Allis-Chalmers Manufacturing Co.

**F**OR more than a century, men of vision and courage have contributed their talents toward making Allis - Chalmers a manufacturer of the most diversified line of industrial equipment in the world. Growing with the nation, this giant producer of power generation, power distribution, power utilization equipment, and farm machinery was conceived by Edward P. Allis, an aggressive young man who came to Milwaukee in 1846 after graduating from Union College, Schenectady, N. Y., with a degree in law. Convinced of the potentialities of the 14-year-old French burr mill stone firm of Decker & Seville in the expanding Milwaukee milling center, Allis acquired the company in 1861.

The Edw. P. Allis & Co., Reliance Works, served as the springboard for Allis' policy of diverse manufacture—adding new products and services to meet the changing requirements of a wide range of industries. The policy is still being adhered to, and today the company produces 1,600 products in nine plants employing more than 33,000 persons.

At the time of Allis' death in 1899, in addition to sweeping developments in flour mill, saw mill and steam power machinery, Edw. P. Allis & Co. had designed and built hoisting engines for various Lake Superior copper mines, rolling mill engines for steel companies, blowing engines for blast furnaces and Bessemer converters;

had introduced the wrought iron frame for large engines, and made many other important contributions to industry and the nation.

By 1900, the reputation of The Edward P. Allis Company—the firm name selected following Allis' death—had become world wide, due in no small measure to the genius of Edwin Reynolds, who was internationally recognized as an outstanding engineer in the field of big Corliss engines and centrifugal pumping engines.

In May, 1901, merger of the Edward P. Allis Company, Fraser & Chalmers Co., Gates Iron Works, both of Chicago, and the Dickson Mfg. Co., Scranton, Pa., to form the Allis-Chalmers Company, contributed well established leadership in certain basic lines of machinery together with valuable designs, plant facilities and personnel.

As a result of this merger, Allis-Chalmers shaped up something like this:

Its annual business reached the \$10,000,000 mark. It employed 5,000 men in five plants. It had branch offices in ten leading American cities as well as offices in London, Mexico City, Johannesburg and Santiago abroad.

The years following the merger were years of experiment—intense development work—rapid expansion into new fields. They marked the acquisition of patent rights making Allis-Chalmers the sole licensee in the western hemisphere of hydraulic turbine developed by Escher-Wyss & Co., Zurich, Switzerland; sole rights in the western hemisphere to manufacture Nurnberg gas engines produced by the Nurnberg Machine Co., Nurnberg, Germany, and in 1904 Allis-Chalmers took over the

**MADISON \*Boreaming increases  
parts production 70% for "EASY" washers**

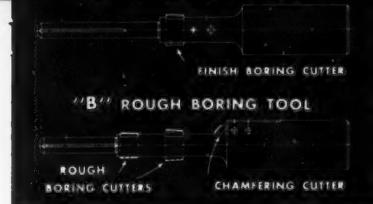


\*Completed boring operation

Here's the story: An aluminum casting required the following operations on inside and outside diameters — Rough bore 1st ID — Rough bore 2nd ID — Finish 1st ID — Chamfer ID — Face Shoulder — Turn 1st OD — Turn 2nd OD — Finish 1st OD — Finish 2nd OD — Thread 2nd OD.

Using single point tools, all six of the turret faces were required to finish a single casting. 19.7 parts per hour were completed.

With Madison Boreaming, EASY WASHING MACHINE CORP. was able to accomplish the same machining on three turret faces, permitting two completed castings per turret



revolution. 33.6 parts per hour were completed.

Thus with two Madison tools Easy gained a production increase of 70.5%. Why not put Madison Boreaming to work for you?

Write for the Madison Catalog today. Get the facts on Madison Boreamers, the tools that make one operation out of boring and super finish reaming.

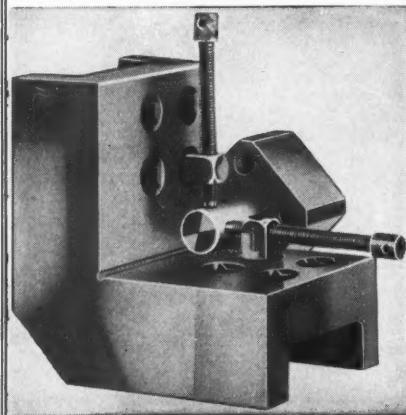


**MADISON**

**MANUFACTURING COMPANY**  
DEPT. MM-1

MUSKEGON, MICHIGAN

# SQUAR-IT CLAMPING BLOCKS



Save costly set-ups in holding small work. All surfaces ground square with their opposite and right angle faces . . . to assure a perfect job on removal from block. Square sliding clamps are fitted to broached holes for easy removal. Furnished with two long and two short sliding clamps. Screws have knurled heads with hex broached hole in end for wrench tightening. Blocks furnished hard or soft . . . Model H-4 or S-4.

**Write for folder.**

Also manufacturers of Drilling Plates and Radius Emery Wheel Dressers.

**TALLMAN TOOL & MACHINE CORP.**

ROCHESTER



NEW YORK

Bullock Electric Mfg. Co. of Cincinnati, O., and Montreal, Canada.

It was Gen. Otto H. Falk, who headed the reorganized Allis-Chalmers Mfg. Co. in April, 1913, who decided the company needed a product to make its name known to the public to provide the steady volume that can be obtained only by selling to hundreds of thousands of individual customers. After careful thought and study, agricultural equipment was decided upon. The first product was a tractor, which appeared in 1914.

Between 1928 and the present, Allis-Chalmers acquired eight companies to enable it to produce its present extensive line of tractors, farm and road machinery. Two of the greatest contributions to American agriculture in several decades were the adaption of rubber tires to farm tractors by Allis-Chalmers in 1932, and the introduction of the company's All-Crop Harvester in 1935. This was followed by the first rear engine tractor in 1948.

By 1917 Allis-Chalmers was making hundreds of different products, serving virtually every industry. A remarkable period of expansion in machinery lines started in 1924 with Allis-Chalmers acquiring five companies between that year and 1931. Its policy of diversification was drawing dividends. Its soundness was evidenced by the manner in which Allis-Chalmers weathered the 1929 depression.

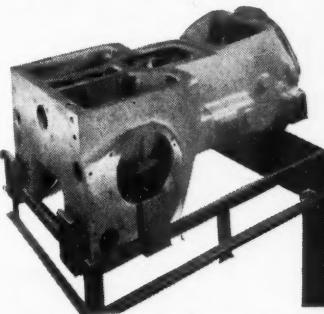
In 1924, Allis-Chalmers made history in a new field with the introduction of the Texrope V-belt drive. This application of V-belts in multiple was originated by Walter Geist, who became president of the company in 1942. His climb to the top is a typical American story.

Geist started with Allis-Chalmers as an errand boy in 1909. Being a member of a large family, he was obliged to quit school at the age of 16 and go to work. Displaying drive and initiative, he advanced from errand boy to

# BESLY

## TAPS

Share in the  
Production of  
**INTERNATIONALS**

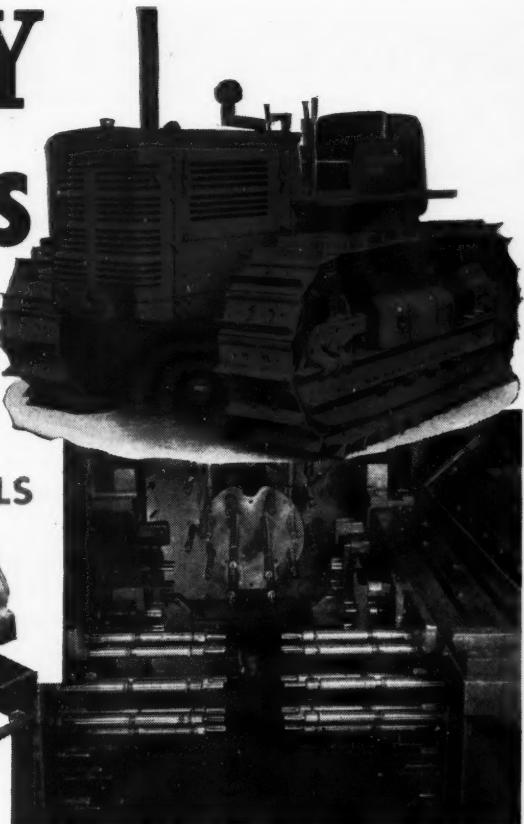


Above: this rugged, one-piece frame casting is the "back-bone" of an International Tractor.



**Profitable  
Facts For  
Tap Users**

This handy booklet offers useful information on taps and tapping procedures. It's written by shop men for shop men. Tap fits and drill sizes are listed in detail. Write today on your own letterhead for your copy—free.



For multiple tapping on tractor frames, this automatic machine, equipped with Besly high-speed taps, threads 89 holes in a single operation.

The International Harvester Company relies on Besly Taps for many threading operations in building its world-famous diesel tractors.

For more than 50 years—Besley Taps have proved their outstanding capacity for clean-cut, low-cost work. A list of Besly Tap users is a directory of well-known American manufacturers.

*Let a Besly engineer help you select the right tap for every job. Write today for information!*

**CHARLES H. BESLY AND COMPANY**  
118-124 N. Clinton St., Chicago 6, Ill. • Factory: Beloit, Wis.

**BESLY**

**BESLY TAPS • BESLY TITAN ABRASIVE WHEELS  
BESLY GRINDERS AND ACCESSORIES**

tracer, draftsman and designer.

His ability did not go unrecognized. At the age of 31 he was made engineer in charge of transmission. This was excellent progress for a self-educated young man in a large engineering organization. But it proved to be a blind alley. He had gone as far as he could in that department.

This dilemma proved fortunate, for from it a \$30,000,000 idea was born. After two years of experimenting, Geist discovered the principle of the multiple V-belt drive, now known as the Texrope V-belt Drive. Following this development, Geist's progress in the company resumed at an accelerated pace. In 1933, he was made general representative of the firm's general machinery division in charge of its sales organization, after extensive traveling in connection with the marketing of his V-belt development. In 1939 he was named vice-president and

continued to supervise the marketing of the company's 1,600 general machinery products through 60 district offices. Before being appointed president by the board of directors in May, 1942, he served as executive vice-president for a short time.

Formal recognition of Geist's contribution to American industry came in 1940 when he was awarded the "Plaque of the Modern Pioneer." The award was made by a distinguished committee of scientists headed by Dr. Karl T. Compton, president of the Massachusetts Institute of Technology. In addition he has been awarded doctorates in law and engineering by Lawrence College, Appleton, Wis., and the Michigan College of Engineering and Technology at Houghton, Mich. Keenly interested in education, he is on the Board of Governors of Marquette University at Milwaukee and a trustee of St. Olaf College at Northfield, Minn.

A black and white advertisement for Acme Industrial Company. The central focus is a large, precision-ground bushing. The words "MAXIMUM ACCURACY IN DRILLING HOLES" are engraved on its side. Below the bushing is a smaller one. A speech bubble from the smaller bushing says "Accurate Interchangeable Concentric". To the right, a cartoon character of a man wearing a cap and holding a cane, with "ACME" on his chest, stands next to a speech bubble containing the text "...it's the bushing that makes the w**HOLE** difference". Another speech bubble below the character contains the text "To maintain maximum accuracy in drilling operations, use the bushing that's precision made for the job . . . use Acme! Write for catalog." At the bottom, the company name "Acme Industrial Company" is written in a stylized font, with "Makers of Hardened and Ground Precision Parts" and the address "212 N. LAFLIN ST., CHICAGO 7, ILLINOIS". The bottom line reads "THE SERVICE SHOP TO INDUSTRY FOR MORE THAN 25 YEARS".

*Now* a belt that speeds up  
stock removal, and  
lasts 2 to 4 times longer

THE *NEW*  
**RESINALL METALITE\***

Here's a cloth backstand belt that takes the high heat of fast stock removal, and gives 2 to 4 times the usual dry grinding mileage.

The answer is *in the bond* — a thermosetting resin that heat cannot weaken, combined with the Behr-Manning patented Durabonded\* process which assures extra strength and grain-grip, and retards loading. This heat-proof bond locks every abrasive grain in its original, correct cutting position.

Result: Sustained sharp cutting, 2 to 4 times longer — less down-time for belt changing — higher production and economy all along the line.



**BEHR-MANNING • TROY, N. Y.**  
Division of Norton Co.

**GET A FREE  
DEMONSTRATION**

See the new RESINALL METALITE belt do its stuff in your own shop on your own work. Just write us on your letterhead.

\* Reg. U. S. Pat. Off.

**THE BELT METHOD IS THE BETTER METHOD  
... AND THE BETTER BELT IS METALITE**

# Farrel-Birmingham Company, Inc.

THE Farrel Company had its beginning in 1848, when Almon Farrel and his son, Franklin, built a foundry and machine shop in what is now Ansonia, formerly part of the town of Derby, Connecticut. Almon Farrel was an expert millwright and had developed marked talent as an engineer. Franklin Farrel had begun his training with his father at the early age of fourteen. In 1847 Almon Farrel acquired a tract of land from Anson G. Phelps, plus "one-half square foot of permanent water" from the canal they had recently completed for Mr. Phelps. The following year a small shop was built to make brass and iron castings, wooden mortise gears and parts for water-power plants. The firm was known as Almon Farrel & Company.

In 1849, the same year that saw the opening of the Naugatuck Railroad from Bridgeport to Winsted, the name of the Farrel company was changed to Farrel, Johnson Co. This was succeeded in 1850 by another firm called Farrel Foundry. Associated with the Farrels in these partnerships were Richard M. Johnson, a patternmaker, and E. C. Lewis, a foundryman. Because of the need for quicker repair service in the Waterbury area, the company opened another foundry and machine shop in that city in 1851. This branch plant was taken over by its manager, E. C. Lewis, in 1880, becoming a separate corporation under the name of Waterbury Farrel Foundry & Machine Company.

In 1857, shortly after Almon Farrel's death, the company was incorporated as Farrel Foundry & Machine Co. Franklin Farrel, who had been associated with the firm since its found-

ing, became President in 1869, and continued as head of the company until his death in 1912.

In supplying the needs of growing New England industry, the new company met its early opportunities. The firm specialized in heavy castings and in the manufacture of rolling mill equipment for the rapidly expanding copper and brass industries. It also pioneered in the development of processing machinery for the rubber industry, which was commencing its important growth following the discovery of vulcanization by Charles Goodyear in nearby Naugatuck in 1839.

The Farrel plant also entered into the manufacture of equipment for other industries which were fast gaining ground in the western hemisphere. One was the paper industry, for which rolls and calenders have been made at Ansonia for over three-quarters of a century; another the cane sugar industry, which at this time was attaining a foothold in the West Indies. Farrel began the manufacture of cane mill equipment in 1870. As early as 1890, two large mills, weighing 320 tons each, were shipped to Cuba.

Stone and ore crushers, starting about 1875, also became important items of production, and by the turn of the century thousands of these sturdily constructed and durable units had found ready acceptance in the growing mining industry and the expanding fields of building and road construction. About 1885 chilled iron rolls were introduced into the grain industry, where they rapidly replaced stones formerly used for milling flour. This added another important industry to the list of Farrel roll users. Still



## IT TAKES SOMETHING EXTRA TO BE A Specialist!

The railroad engineer is a specialist, trained by years of apprenticeship to accept one outstanding qualification—that of personal responsibility. The Bath organization recognizes its responsibility to industry by maintaining high standards of quality throughout the step-by-step production of ground thread taps.

The selection of steel, the grinding of threads from the solid AFTER hardening, and a rigid system of inspection, guarantees the uniform quality of Bath stock and special size ground thread taps. Years of apprenticeship have produced experienced Bath craftsmen, ready to help with your tap problems. We invite your inquiry—see your Bath representative or write us direct.

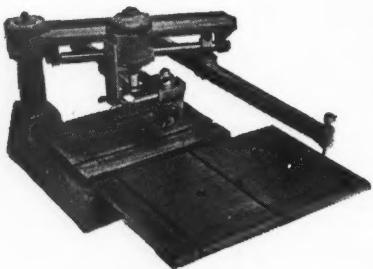
(Transportation is paid to your plant on all Bath products)

**JOHN BATH CO.**  
INCORPORATED

GROUND THREAD TAPS • PLUG AND RING GAGES • INTERNAL MICROMETERS

20 Grafton Street  
WORCESTER 8, MASS.

# Solved! Your Engraving Problem



MODEL CC 3D

A versatile machine for contour milling, profiling and engraving. Covering far larger areas and selling at a lower price than any machine now available.



## Pantograph Controlled

**Model PE-1.** Engraves an area 5 by 5 inches on curved surfaces without special templates, with smooth lines in any design, number, letter; on iron, brass, copper, aluminum, soft steels and all plastics. • Drills a series of holes • Profiles small parts • Increases accuracy and production • Works from original drawing or templates • Etches glass and similar items • Will not cause distortion. For information and prices write Dept. M.

Consult your distributor or

**AUTO ENGRAVER CO., Inc.**  
1776 Broadway      New York 19, N. Y.

another successful undertaking was the early development of machines for grinding rolls to higher standards of accuracy and finish.

In 1920 the company acquired another plant in Buffalo to take care of increased demand for its products and to specialize in the manufacture of gears, gear drives and gear generating machines. With this new phase of the Farrel business came the acquisition of American rights to the important Sykes gear generating process.

## Along an Adjacent Path

In 1836, twelve years before the Farrels started their plant in Ansonia, two brothers, Sylvester and Sullivan M. Colburn, came to the town now known as Derby, Connecticut, and started a small foundry. Later they were joined by another brother, Dr. Josiah M. Colburn.

This enterprise, which nearly a century later became an important part of Farrel-Birmingham, was called Birmingham Iron Foundry, since in these early days, the town was called Birmingham.

In 1850, the firm became a corporation, one of the first eight businesses to be incorporated under the laws of the State of Connecticut. At that time, a machine shop was added. The company was the first in Connecticut and one of the first in the United States to manufacture chilled iron rolls, which, until this period, had to be imported from England. When the corporation was formed, Sheldon Bassett came into control and headed the company as President until his death in 1864, when he was succeeded by his son, Royal M. Bassett.

The company continued under the management of Royal M. Bassett and his brother, Theodore S., until 1891, when Henry F. Wanning, who had been associated with the company since 1865, became its President. His

# Immediate shipments from stock

## of U·S·S Carilloy Steels

— manufactured to a  
**Guaranteed Minimum  
Hardenability**



If you are a user of alloy steel, it is to your advantage to know that U·S·S Carilloy Steels in our stock are manufactured to a *Guaranteed Minimum Hardenability*.

And when you place an order with us for U·S·S Carilloy Steel you get an additional metallurgical service: *A Heat Treatment Guide* which contains complete and specific information about the steel you receive is supplied you with each individual shipment. This guide gives you specific data on the composition, potential physical properties and fabrication of the steel to help you obtain the maximum performance from the steel we furnish on your order.

In addition to these advantages, large and diversified stocks of U·S·S Carilloy Steel make it possible for us to serve your alloy requirements quickly. You are assured of reliable performance when you order alloy steels featuring *Guaranteed Minimum Hardenability*.

### SYMBOL OF SERVICE for Steel Users

#### UNITED STATES STEEL SUPPLY COMPANY

BALTIMORE · BOSTON · CHICAGO · CLEVELAND  
LOS ANGELES · MILWAUKEE · NEWARK · PITTSBURGH  
ST. LOUIS · SAN FRANCISCO · TWIN CITY (St. Paul)

# UNITED STATES STEEL

# \* VAC-IT

## does all your cleaning

### JOBs



The durable Doyle Vac-It is constructed to handle any cleaning job in your plant efficiently and without the necessity of changing parts. Wet and dry cleaning jobs are all the same to the Vac-It. Dirt and dust are removed from plant and office floors and walls . . . overhead pipes, production line machinery and installations are quickly cleaned and kept free from clogging dirt and metal scraps with the Doyle Vac-It and Doyle equipment. The Vac-It does not push dirt around . . . it picks it up and removes it from the plant.

The powerful suction of the Vac-It also recovers lubricants, coolants or water at the rate of 720 gallons per hour.

Vac-It will make all your cleaning jobs easier, faster and less costly.

*Write for  
complete data  
today.*

**Doyle**  
**VAC-IT**

**DOYLE**  
**VACUUM CLEANER CO.**

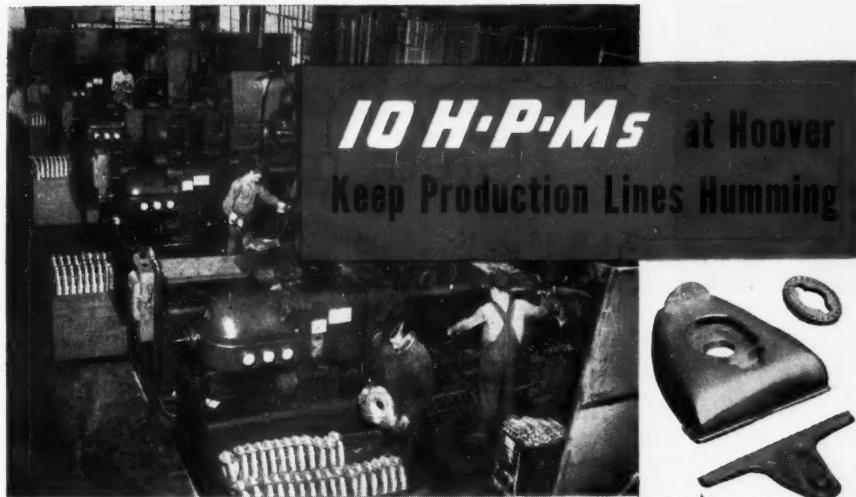
3225 Stevens St., S. W.  
Grand Rapids 7, Michigan

son, Francis D. Wanning, joined the company in 1894, and during the years that followed played an important part in its management, serving as Vice-President for many years until the merger with Farrel Foundry & Machine Co. in 1927, when he was elected Vice-President of the newly incorporated Farrel-Birmingham Co.

During its long life Birmingham Iron Foundry built special machinery for many purposes, including machines for making wire nails, axe polls and pick-eyes, and for rolling bayonets and gun barrels.

The concern introduced a number of new designs and improved machinery for the rubber industry. Important among these were the bias cutter, hydraulic belt stretcher, multiple roll calenders, the Gordon plasticator, and the Banbury mixer, the latter having since become one of the most, if not the most, important single machine used in the rubber industry today.

For many years prior to World War II, Farrel-Birmingham produced processing machinery for a number of important industries in the United States, and in many foreign countries as well. Peacetime products included then, as they do now, various types of machinery and equipment for the processing of rubber, plastics, linoleum, asbestos, paper, and for grinding sugar cane, rolling nonferrous metals and crushing stone and ore. Many types of rolls, and roll-using machines, including metal rolling mills and rubber and plastics mills and calenders, rank high on Farrel-Birmingham's list of products. Power transmission equipment, such as gears and gear units, for industrial and marine applications form another important product classification. Hydraulic presses, roll grinding machines, gear-making machinery, foundry products and weldments produced by Farrel-Birmingham are also well known to peacetime industry.



## 10 H-P-Ms at Hoover Keep Production Lines Humming

**1** H-P-M die casting machines are the answer to production of intricate parts for Hoover electric cleaners as well as millions of parts that Hoover supplies to other manufacturers. Die castings permit greater freedom of design... better, more uniform, and lighter precision parts... and a decided savings due to high production output, lower material costs, fewer machining operations, less scrap.

**2** H-P-M die casting machines are putting the "skids" under production costs in many companies where high priced material and labor are threatening profits. Why not take a tip from Hoover? Change to die castings. Let us show you how to make precision metal parts better... faster... cheaper with H-P-Ms. Two basic types of machines—(1) cold chamber, (2) submerged plunger, are available in a complete range of sizes. Call in a nearby H-P-M engineer to recommend the correct type and size for your job.



*Die castings used in the  
Hoover electric cleaner*

*Just off the press—an authoritative article describing modern die casting practice. Write for your free copy today!*

### THE HYDRAULIC PRESS MFG. COMPANY 1048 MARION ROAD • MOUNT GILEAD, OHIO, U.S.A.

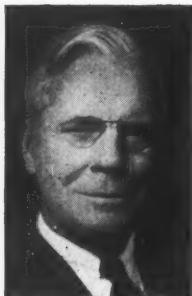
Branch Offices in New York, Cincinnati, Cleveland, Columbus, Detroit, Pittsburgh, and Chicago. Representatives in other principal cities. Export Dept.: 500 Fifth Ave., New York. Cable—"Hydraulic"

**HPM**

All-Hydraulic  
Self-Contained

METAL WORKING PRESSES

REVOLUTIONIZING PRODUCTION WITH HYDRAULICS SINCE 1877



James Finney Lincoln,  
President, Lincoln  
Electric Company

# A Great Man and a Great Idea Built a Great Industry

JAMES FINNEY LINCOLN, world leader in the development of modern arc welding, was born on a farm

near Painesville, Ohio. His father was a preacher, advanced in years, and physically unable to carry on the work of the farm. Thus Jim learned early to labor and, as it happened, hard work agreed with him. He obtained his early schooling by walking 3½ miles to school every day and in time, through dint of savings and a timely loan from an older brother, he was able to finish his education at Ohio State University.

Upon completion of his college career Jim accepted a job with his brother, who had started the Lincoln Electric Company with \$250 of borrowed capital. John's first shop was in the basement of his home in downtown Cleveland. Confident of an eventual market for welding equipment in ever-increasing amounts, Jim convinced his brother of its possibilities and as a consequence their small company undertook the manufacture of this equipment. The turning point in Jim's career came when his brother relinquished management of the business and turned it over to the younger brother.

Jim Lincoln's mind was seething with creative impulses at the very moment when the new age of electricity was sparking with a thousand implications. A record of his enthusiasm for tying technical achievements to useful purposes is contained in a list of

21 patents issued to him in his own name. Many were obtained during the period of his life when he was chafing at the bit of mere salesmanship, and were engineered in his home workshop.

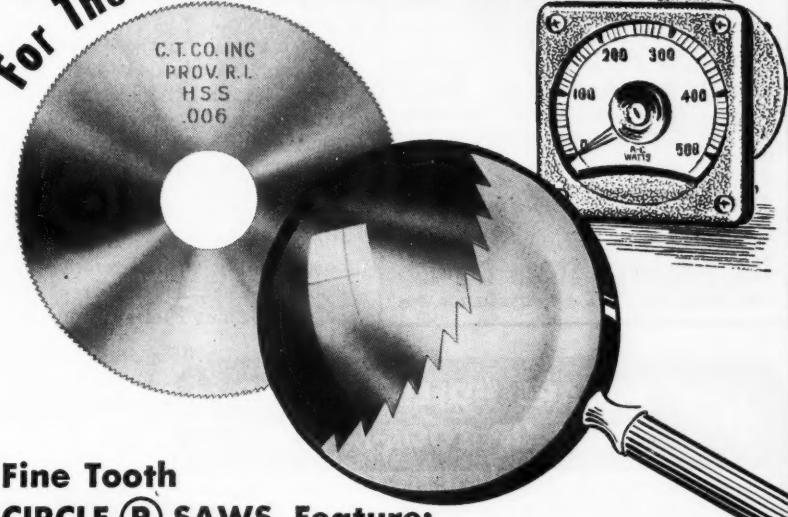
Jim Lincoln was 31 years old when he took off his coat and sat down in the general manager's chair. He had a fair-sized bundle of untried notions and a lot of healthy ambition, but in the matter of executive detail he was green, and he knew it. Faced with the necessity of getting the "hang" of things quickly, he called a group together composed of a representative elected from each department, a representative elected by the foremen, and his superintendent. This group he invited to sit down with him and discuss ways and means for accomplishing the tasks before them, and thus was born an advisory board which to this day still meets.

One day during the depression a member of the board asked "If we produced more could the company pay us more?" Lincoln said he'd try it if the men wished. They did—and the plan became a booming success. Production per man tripled. Lincoln employees became the highest paid workers in industry. Savings resulted for the consumer, with improved, stream-lined electric welders selling at a fraction of their original cost.

Other factors in the spectacular rise of Lincoln Electric from a horse and buggy outfit into the great enterprise that it is today were Jim Lincoln's compelling emphasis upon welding as the basic stock in trade, his intensive

# CIRCLE R SAWS

The Finest Teeth  
For The Finest Precision Instruments!



## Fine Tooth

### CIRCLE R SAWS Feature:

30 teeth per inch

1" to 6" diameters

Thickness .006 in standard sizes; furnished in .003 up to 1½" diameter as specials.

Throughout American Industry these CIRCLE R SAWS have provided for years the delicate precision necessary for producing fine measuring, indicating and control instruments.

**CIRCLE R SAWS**  
The "Standard" of Saw Quality

### CIRCULAR TOOL CO., INC.

PROVIDENCE 5, R. I.

Chicago • Philadelphia • New York • Dayton • Cleveland  
Los Angeles • Rochester • Indianapolis • Detroit  
St. Louis • Minneapolis

## Why THOR STAMPS Last Longer



. . . because they're made of a special, correctly-heated alloy steel. Central striking point assures uniform marking. Thumb side marking assures easy use.

You get more mark per dollar with THOR STAMPS. Write for catalog and prices.

**The Pittsburgh Stamp Co., Inc.**  
812 CANAL ST. • PITTSBURGH, PA.

campaign to gain general recognition of its value to industry, and his long-term program calling for a better and better product at a continually lower price.

Lincoln Electric soon outgrew its existing facilities. Expansion was accomplished through purchase from the bankrupt Grant Motor Company of its huge automobile plant in East Cleveland. From that point, the growth of the enterprise has been along a steeply rising curve.

In addition to the Cleveland plant, Lincoln Electric now operates factories in England, Canada, and Australia. Where once a mere 100-odd workers carried the load, today the organization numbers thousands. In one year this corporation, owned by the people who work or who have worked with the company, and free of debt, grosses considerably in excess of 35 million dollars. That is the free enterprise saga of James Finney Lincoln.

## How SQUARE HOLED SLEEVES SPEED UP TOOL-MAKING!

One of the most difficult problems in tool making can be solved easily and quickly with Sturdy Square Holed Sleeves. The perfection of broached square holes can be had in boring bars, milling cutters and many other applications at a small fraction of the cost of imperfect hand-made square holes. The Sturdy Square Holed Sleeve consists of a round sleeve with a perfectly square hole broached through the center. This hole is tapped at one end to receive a back-up screw which is furnished with the Sleeve. The Sleeve can be sweated or pressed into a drilled and reamed hole to make a perfectly square accurate hole in a very few minutes.

The Sturdy Square Holed Sleeve will save you many hours and many dollars in the making of boring bars, tool holders and other tools requiring square holes.

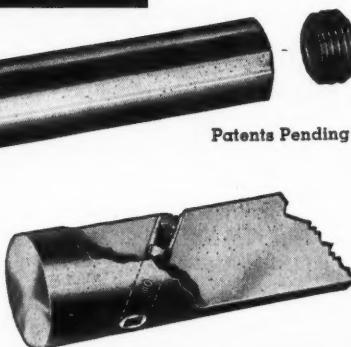
### BUSHINGS MADE IN FOLLOWING SIZES:

$\frac{3}{16}$ ,  $\frac{1}{4}$ ,  $\frac{5}{16}$ ,  $\frac{3}{8}$ ,  $\frac{7}{16}$ ,  
 $\frac{1}{2}$ ,  $\frac{9}{16}$ ,  $\frac{5}{8}$ ,  $\frac{11}{16}$ , 1"

Some Territories Still Open to Jobbers

**STURDY BROACHING SERVICE**  
23516 TELEGRAPH RD., DETROIT 19, MICH.

Patents Pending

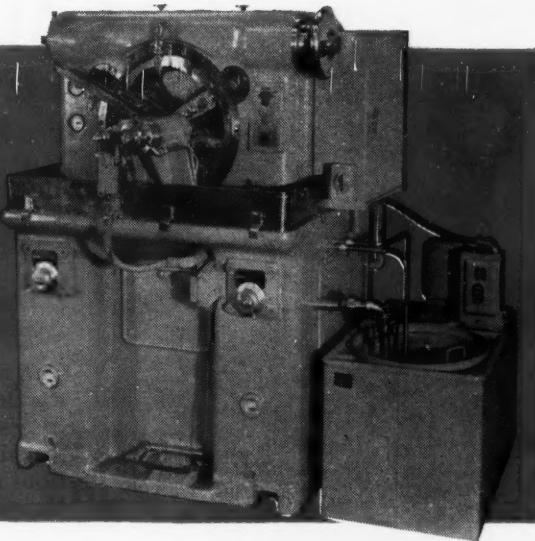


**Write for  
Literature**

# WANT CLOSE-FIT THREADS...FAST?

Then you want

THE NAMCO  
TRIPLE ROLL  
HYDRAULIC  
THREAD and FORM  
ROLLING MACHINE  
with  
Magazine Feed  
and  
Hydraulic Loader



This new precision high-production machine is the perfect answer for shops that have a large volume of long and short thread work requiring up to class 4 fit and unsurpassed finish.

Operating on the feed-through principle, with interchangeable two-roll or three-roll heads, the Nameco Thread Roller regularly produces smoother, more accurate work than ground threads. Capacities range from  $\frac{3}{8}$ " up to  $1\frac{1}{2}$ " using three rolls—and  $\frac{1}{8}$ " to  $\frac{1}{16}$ " using two rolls. Because of three-roll operation and three-point support which eliminates distortion, the machine is a "natural" for hollow work.

With the addition of magazine feed and hydraulic loader, just announced, the Nameco Thread Roller becomes the fastest, most versatile, *most accurate* means for threading and form rolling, solid or hollow work to close tolerances with fine finish. Send us samples of the jobs you do; we'll do the rest—in quoting you on your requirements.



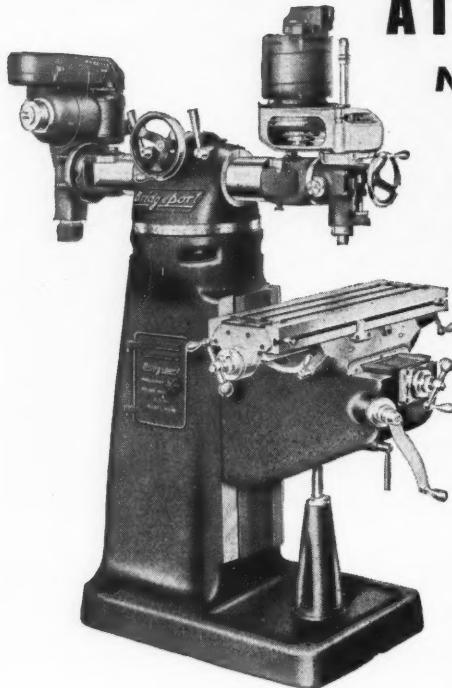
Complete details on the Nameco Thread Roller are contained in this new eight-page bulletin. Ask us for TR 47.

## The NATIONAL ACME CO.

170 EAST 131st STREET • CLEVELAND 8, OHIO

Acme-Gridley Bar and Chucking Automatics:  
1-4-6 and 8 Spindle • Hydraulic Thread  
Rolling Machines • Automatic Threading Dies  
and Taps • The Chronolog • Limit, Motor Starter  
and Control Station Switches • Solenoids  
Centrifuges • Contract Manufacturing

# MILLING, DRILLING AND BORING AT ALL ANGLES

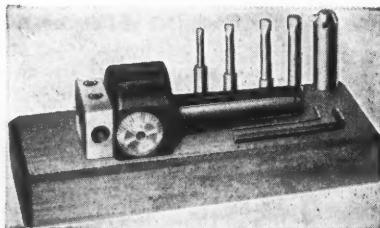


**NEARLY 10,000 IN USE**

You can use the Bridgeport Turret Milling Machine (with High Speed Attachment) for milling, drilling and boring *at all angles*, with maximum ease and convenience. It's a precision machine for production demands — accurate, sturdy, speedy, powerful.

The wide range and versatility of the Bridgeport Attachment enable it to serve as the complete central machine around which all operations revolve in many small shops. Features include: 15" diameter turret with 5" overarm, rugged construction, table, knee and saddle in convenient front-of-machine position, anti-friction bearings throughout, keyed overarm with worm wheel control for angular settings, large diameter graduated dials. *Write for Bulletin.*

## BRIDGEPORT No. 1 BORING HEAD



Specially designed for Bridgeport Machines and Attachments but equally efficient on other machines. Diameter of head, 2 $\frac{1}{4}$ ". Adjustment of slide,  $\frac{5}{8}$ ". Three holes for  $\frac{3}{8}$ " diameter boring tools giving a range of more than 5". Complete with 5 boring tools and necessary wrenches.

**WRITE FOR BULLETIN**

## BRIDGEPORT MACHINES, INC.

52 REMER STREET

BRIDGEPORT, CONN.

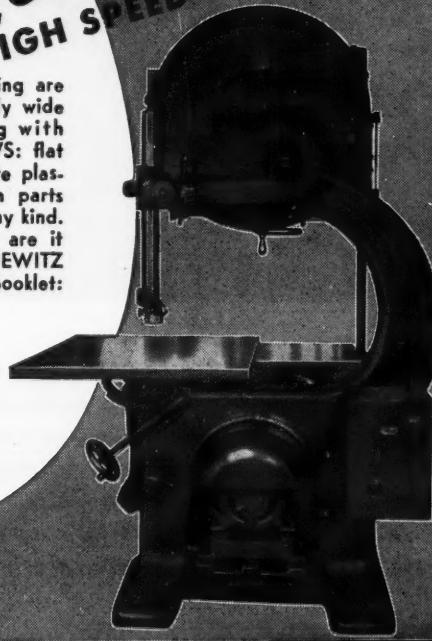
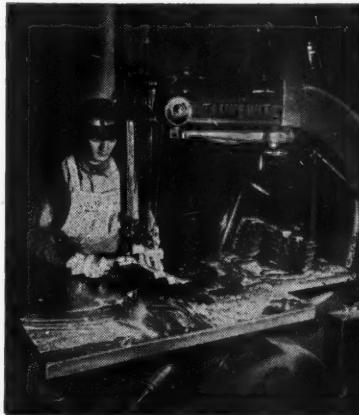
G  
SE  
G  
arret  
igh  
ng,  
les,  
eni-  
for  
ate,  
  
of  
ble  
ral  
er-  
aps.  
ter  
ege  
ad-  
ine  
gins  
ith  
lar  
ted

for Sawing METAL as HARD as a FILE  
or Trimming FORMED PARTS  
- FAST!

Actual photo of file  
friction sawn on  
Tannewitz High  
Speed Band Saw.

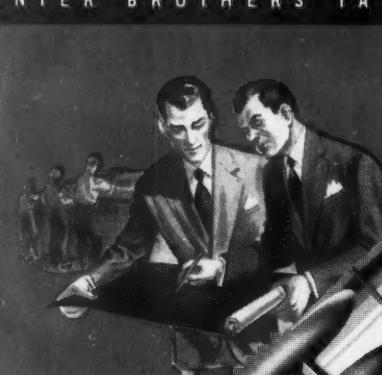
Tannewitz  
HIGH SPEED BAND SAWS

Cost reductions that are downright amazing are effected in the cutting of an extremely wide variety of materials by friction sawing with TANNEWITZ HIGH SPEED BAND SAWS: flat sheets, hardened or soft steels, armor plate plastics, and many others. Formed aluminum parts can be trimmed without using a rest of any kind. Whatever your cutting problem, chances are it can be done faster and better with TANNEWITZ HIGH SPEED BAND SAWS. Write for booklet: "FRICTION SAWING."



THE TANNEWITZ WORKS  
GRAND RAPIDS 4, MICHIGAN

WINTER BROTHERS TAPS ARE DEPENDABLE



Winter Hand Taps are designed for general purpose work, and are made in taper, plug, and bottoming types. Other Winter Taps include Chip Driver, Machine Screw, Nut, Tapper, and Pipe styles.

## MANUFACTURING PROCEDURE

More than modern equipment and good materials are needed to make taps of Winter dependability. Equally critical is the ability to combine the various manufacturing steps into one efficient whole. Winter engineers have more than 47 years' experience in tool design and manufacture. This engineering knowledge, combined with the facilities of a new and modern plant, helps build dependability into Winter Taps and Dies.



### Always at Your Service

YOUR LOCAL DISTRIBUTOR carries a complete stock of Winter Taps on his shelves—as close to your tapping problems as the telephone on your desk.

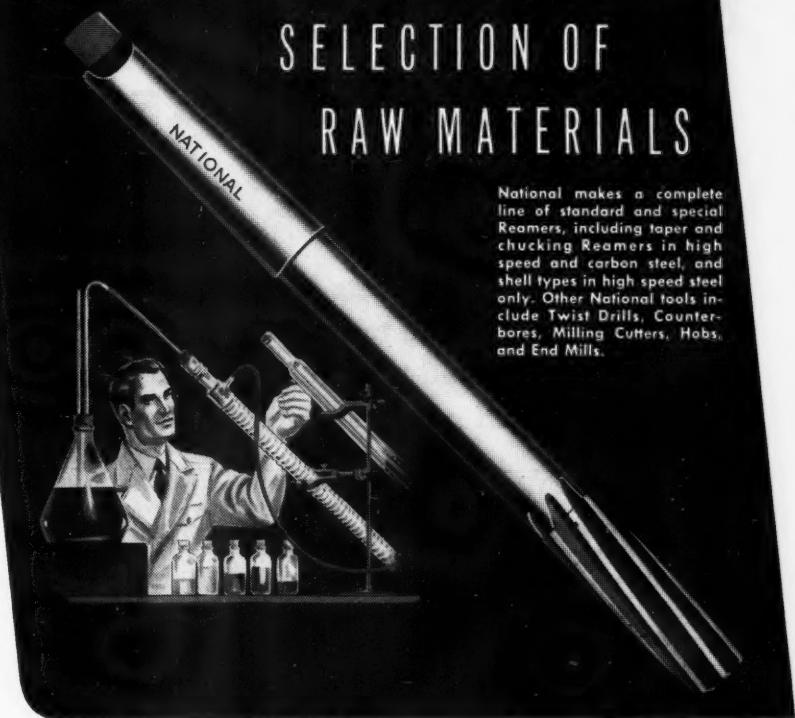
# Winter Brothers COMPANY

ROCHESTER, MICHIGAN, U.S.A. • Distributors in Principal Cities • A Division of  
the National Twist Drill and Tool Company • Branch Stores: New York, Chicago,  
Detroit, San Francisco



PERFORMANCE IS BUILT INTO NATIONAL METAL CUTTING TOOLS

## SELECTION OF RAW MATERIALS



National makes a complete line of standard and special Reamers, including taper and chucking Reamers in high speed and carbon steel, and shell types in high speed steel only. Other National tools include Twist Drills, Counterbores, Milling Cutters, Hobs, and End Mills.



*Call Your Distributor*

LEADING DISTRIBUTORSEVERYWHERE offer complete stocks of NATIONAL Cutting Tools. Call them for cutting tools or any other staple industrial product.

Every bit of steel that goes into National Cutting Tools is rigidly inspected and tested. At the same time, National conducts its own research into the properties of new steels as fast as they are developed. For example, the qualities of hardness and toughness, as related to tool life, are special subjects of National's raw material studies at all times. Methods like these build better performance into National Cutting Tools.

# NATIONAL TWIST DRILL AND TOOL COMPANY

ROCHESTER, MICHIGAN, U. S. A. Tap and Die Division—Winter Bros. Co.  
Distributors in Principal Cities • Factory Branches: New York • Chicago • Detroit • Cleveland • San Francisco



# Freedom of Creative Effort Fosters Engineering Progress

The material presented here is conclusive evidence of the manner in which modern American machine tools have contributed to the high standard of living which prevails in America.

## Surface Hardening 3000 Ring Gears Per Day

**A**N outstanding contribution in the field of heat treatment was recently made by The Cincinnati Milling Machine Company when they placed an electronically controlled gas selective surface hardening machine on the market. This automatic, high production machine hardens only the surfaces desired, holding the pre-quench temperature of the hardened portion within ten degrees. The remainder of the part is not affected by the operation, and core properties are retained.

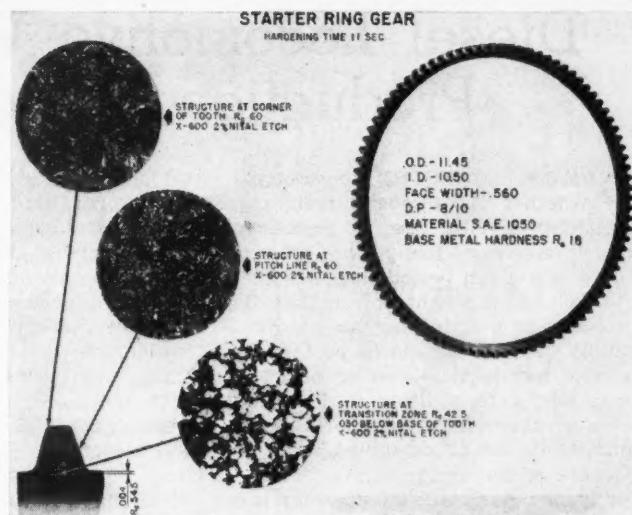
An equally important advantage will be found in the greatly reduced distortion of Flamatic hardened parts. For the parts shown in Fig. 1, accuracy of flatness and concentricity has been improved to the almost unbelievable standard of one-fifth the formerly accepted allowance. The parts can be

machined more closely to finished dimensions before Flamatic hardening; costly corrective operations are greatly reduced or entirely eliminated; scrapped parts due to hardening are a thing of the past.

For comparable rates of production, the capital investment in Flamatic equipment is substantially lower than for other types of heat treating equipment. The machine shown in Fig. 2, installed in the plant of a mid-west gear manufacturer, has an output of 3000 starter ring gears per day. Due to the gradient hardness pattern, the teeth of these gears are exceptionally tough and have a high surface hardness for wear resistance.

Operators of Flamatic Hardening Machines approach the "white collar" classification in cleanliness of their

Fig. 1—Metallurgical Laboratory Report on Starter Ring Gear

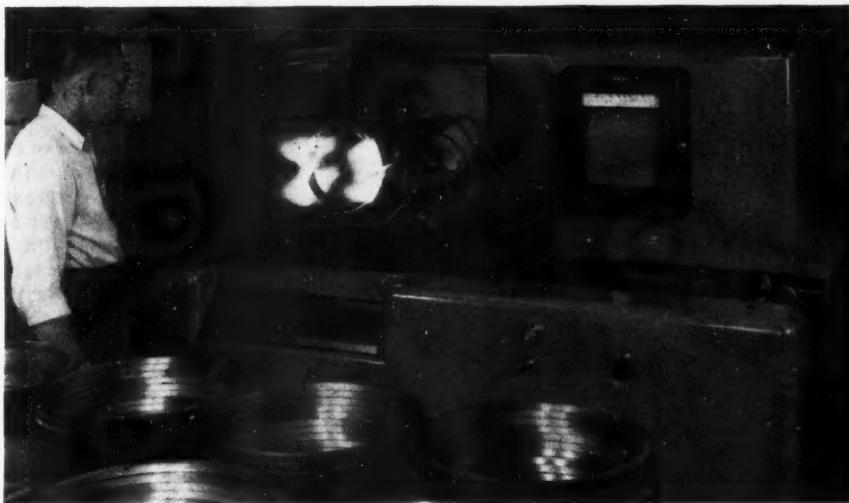


work. Manual operation consists of loading the mandrel and pressing a button; the remainder is automatic. The quenching reservoir is enclosed, and the work is automatically conveyed out of the quench.

Briefly, Cincinnati Flamatic Hardening Machines contribute to the American standard of living by flattening out the curve of inconsistency for hardened parts; by reducing the cost

of subsequent operations, and therefore reducing the overall cost of the part; by reducing occupational hazard and making heat treating a more desirable way to earn a living.

Fig. 2—View of Cincinnati Flamatic Hardening Machine in Operation

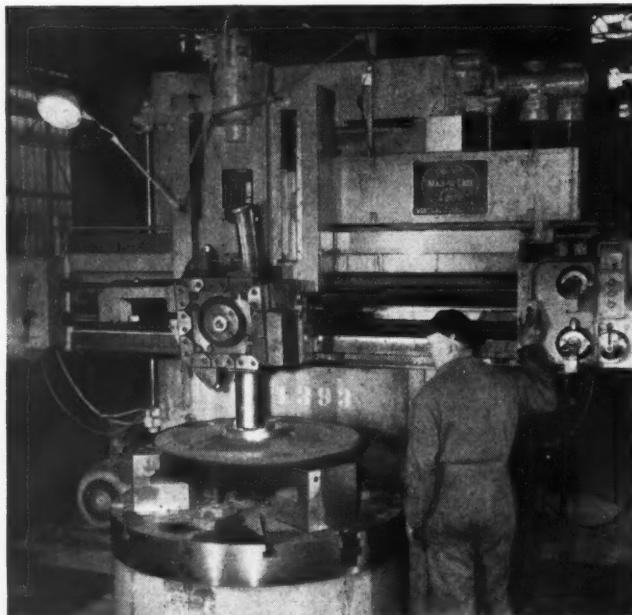


# Diesel Locomotive Wheel Production Tripled

**D**I E S E L-ELECTRIC locomotives, whether in passenger, freight or switching service, are, of necessity, kept in service so many more miles or hours in a given period than has been the case with steam power that the problem of maintaining an adequate supply of steel wheels to protect the service has become one of no mean proportions. In addition to a demand for a greater number of wheels the requirements as to machined surfaces, because of the design of traction motor trucks, has made it necessary radically to revise practices with respect to the machining of wheels and to explore new fields in the matter of machine tools and tooling equipment.

The Boston & Maine, which, for example, operated road Diesel power for a total of 4,529,683 locomotive miles and switching Diesels for a total of 239,144 hours during the year 1946, found that even with the most modern manually controlled wheel boring equipment in its North Billerica, Mass., shops it was not able to keep up with the mounting demand for steel wheels for Diesel locomotives, rail cars and passenger equipment. In 1945 that road initiated an intensive study of wheel finishing operations which resulted in the purchase of a 54-inch Bullard Man-Au-Trol vertical turret lathe for steel-wheel finishing. This machine was installed and placed in regular operation late in 1947. It is able to turn out more than three times the maximum output of the manually controlled vertical turret lathe formerly used on this job.

The former method of machining these wheels was to chuck them in a Bullard 54 - inch vertical turret lathe and per-



Bullard Man-Au-Trol vertical turret lathe for machining Diesel locomotive wheels.

Cincinnati Bickford Super Service Model 21 Drill Press mounted on UNISORB

Reduce  
Vibration...  
End Needless  
Floor Damage

ANCHOR ALL  
MACHINERY  
ON

UNISORB

NO BOLTS...NO LAG SCREWS...NO FLOOR DRILLING

UNISORB . . . the modern way to mount machinery . . . gives you 3 distinct advantages:

1. ENDS NEEDLESS FLOOR DESTRUCTION—As UNISORB requires no bolts or lag screws, there's no longer any need for destructive floor drilling to anchor machinery. Permanent set prevents riding.

2. SAVES INSTALLATION LABOR COSTS—Installation operations are reduced in number, simplified in method when you "Mount It On UNISORB."

3. REDUCES COSTLY VIBRATION DAMAGE—Because UNISORB absorbs from 60% to 85% of transmitted vibration and noise, it saves floors . . . saves buildings . . . saves the machinery

itself from harmful results of its own transmitted vibration!

Today, write for a UNISORB sample and full details.



LOOK FOR THE RED CENTER AND UNISORB BRAND MARK

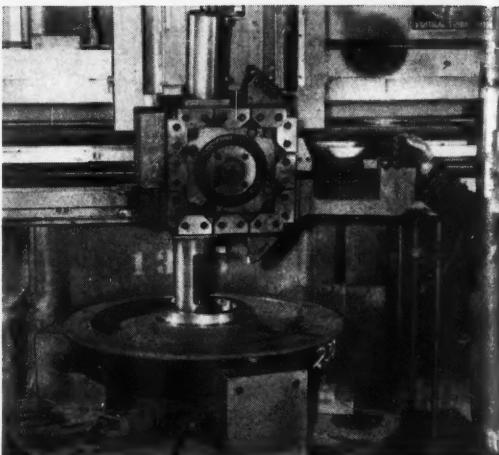
### THE FELTERS COMPANY

210-L SOUTH STREET, BOSTON 11, MASSACHUSETTS

Offices: New York, Philadelphia, Chicago, Detroit  
Sales Representatives: San Francisco, St. Louis  
Mills: Johnson City, N. Y.; Millbury, Mass.; Jackson, Mich.

MOUNT YOUR MACHINERY ON UNISORB ANCHORING PADS

In turret index Position I the rough boring is performed.



form the operations shown in Table I by manual control. The old method required two chucks, the wheel being turned over after operation No. 8, shown in the table. Under the old method 9 of the 14 operations involved the use of high-speed steel tools, the remaining 5 operations making use of carbides. On the new Man-Au-Trol all the tools are carbides.

On the new machine the average time of 64 minutes shown in Table II is routine production, although the machine is capable of going through the automatic cycle in a total floor-to-floor time of less than 50 minutes.

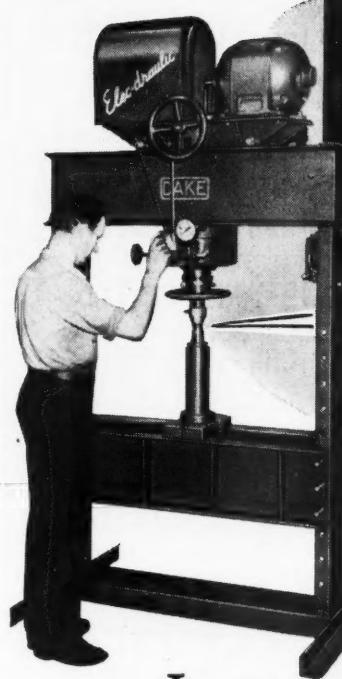
The Man-Au-Trol vertical turret lathe is basically the Bullard Cut Master having a control mechanism which makes it possible to perform automatically any job within the range of the

machine which requires 39, or less, functions. The 54-inch machine installed at the North Billerica shops is equipped with special chucking and tooling equipment for handling 33-inch, 36-inch and 40-inch steel wheels and is the first machine of its type to be used in a railroad shop. While it is kept busy, at the present time, on Diesel wheels the machine can be used for the machining of other parts required by the railroad and can be used either as an automatic machine or operated by manual controls.

An interesting feature of the machine is that the automatic functions are pre-established by securing function dogs on the control drum in operation sequence, then manually bringing the tools through each re-

Table I—Former Method of Machining 40-in. Diesel Locomotive Wheels on Bullard 54-in. Vertical Turret Lathe

Operation	Main head	Side head	Tools Used
First Chucking:			
1. Face rim .....	..	x	Carbide
2. Rough bore .....	x	..	Carbide
3. Finish bore .....	x	..	High speed
4. Rough face hub .....	x	..	Carbide
5. Finish face hub .....	x	..	High speed
6. Rough turn outside diameter of hub .....	x	..	High speed
7. Finish turn outside diameter of hub .....	x	..	High speed
8. Chamfer radius on bore .....	x	..	High speed
Second Chucking (wheel turned over):			
1. Rough face hub .....	x	..	Carbide
2. Finish face hub .....	x	..	Carbide
3. Rough turn hub .....	x	..	High speed
4. Finish turn hub .....	x	..	High speed
5. Turn 20-deg. angle .....	x	..	High speed
6. Turn 45-deg. angle .....	x	..	High speed
Total Time Required:			
Floor-to-floor (machining and handling time)—4 hours			



**Put the  
SQUEEZE  
on  
PRODUCTION COSTS**



- MOTOR-DRIVEN PRESSURE SOURCE
- MOTOR NEVER STOPS
- FINGER-TIP CONTROL
- NO HAND PUMPING

If costs for pressure assembly, riveting, or straightening by hand are mounting, investigate the many Dake production presses. Pressures up to 75 tons are available; electric-hydraulic or air-operated presses are especially advantageous where steady, rapid operation is required. The Elecraulic press shown above provides speedy, easily repeated pressures with simple hand-lever control. There's no hand pumping.

For detailed information, write Dake Engine Company, or mail the coupon for your copy of the Dake Press Catalog.



Dake Engine Company  
612 Seventh St., Grand Haven, Mich.  
Please mail me a copy of the latest  
Dake Arbor Press Catalog.

Name \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

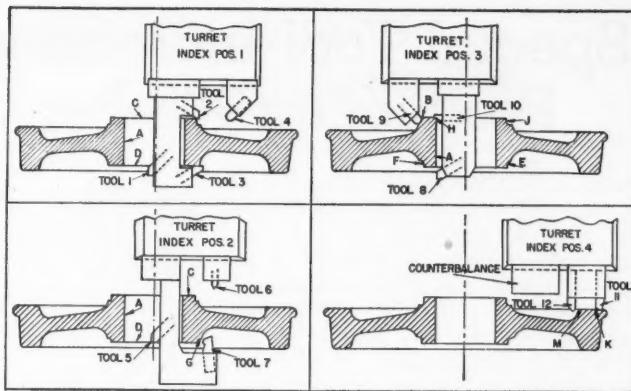
Table II—Operation-Data for A-40 Diesel Wheels on Bullard 54-inch Man-Au-Trol

Oper. No.	Main Head Movement	Tr. Feed R	L Up	Down 6	Operation g	Tool Index Position	Work Diam. in.	Length Surface Table ft. per Sped. in. per rev.	Feed min. sec.	Time* min.
1	2	3	x	x	To position	—	None	—	—	—
1	2	x	x	x	To position	—	None	—	—	—
3	3	x	x	x	Rough bore A	1	9,000	115	.020	.00
4	4	x	x	x	Rough $\frac{3}{4}$ in. radius B	1	13,500	175	.015	.30
5	5	x	x	x	To position	1	None	175	.015	.00
6	6	x	x	x	Straddle face hub C and D	1	263	13,500	.015	.40
7	7	x	x	x	To position	—	—	—	—	—
8	8	x	x	x	To position	—	—	—	—	—
9	9	x	x	x	Turret Indexes to Position 2	—	—	—	—	—
10	10	x	x	x	To position	2	—	—	—	—
11	11	x	x	x	To position	2	—	—	—	—
12	12	x	x	x	Semi-finish bore A	2	5	9,215	.020	.50
13	13	x	x	x	To position	2	—	—	—	—
14	14	x	x	x	Semi-finish E	2	—	—	—	—
15	15	x	x	x	To position	2	7	13,500	.020	.00
16	16	x	x	x	Cut 20-deg. Angle F	2	—	—	—	—
17	17	x	x	x	Finish E	2	—	—	—	—
18	18	x	x	x	Cut 45-deg. chamfer G	2	—	—	—	—
19	19	x	x	x	Finish bottom face hub C	2	—	—	—	—
20	20	x	x	x	To position	3	—	—	—	—
21	21	x	x	x	To position	3	—	—	—	—
22	22	x	x	x	To position	3	—	—	—	—
23	23	x	x	x	To position	3	—	—	—	—
24	24	x	x	x	To position	3	—	—	—	—
25	25	x	x	x	To position	3	—	—	—	—
26	26	x	x	x	To position	3	—	—	—	—
27	27	x	x	x	Finish bore A	3	8	9,223	.015	.80
28	28	x	x	x	Chamfer bore H	3	10	9,223	.020	0.15
36	36	x	x	x	Finish $\frac{3}{4}$ in. radius B	3	9	13,000	.015	1.15
31	31	x	x	x	To position	3	—	—	—	—
32	32	x	x	x	To position	3	9	13,000	.015	1.00
33	33	x	x	x	Finish hub diam. J	3	—	—	—	—
34	34	x	x	x	Feed left to clear tool	3	—	—	—	—
35	35	x	x	x	Turret indexes to Position 4	—	—	—	—	—
37	37	x	x	x	Manual operation - Face rim K	—	—	—	—	—
38	38	x	x	x	Manual operation - Cut wear limit groove M	—	—	—	—	—
39	39	x	x	x	To starting position	4	—	—	—	—
40	40	x	x	x	Turret indexes to Position 1	—	—	—	—	—
										Total Cutting Time
										Loading & unloading
										Floor-to-floor time

\*Combined cutting time and machine movement time

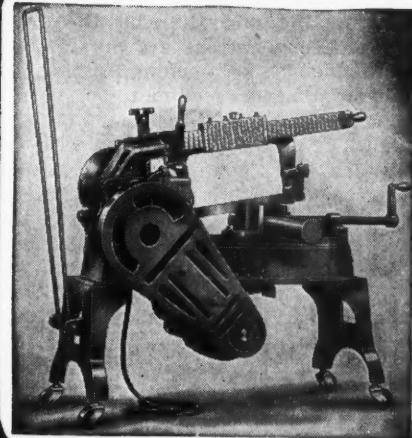
Data for the machining operations indicated by these drawings are given in Table II.

spective cut. At the completion of each cut a setting is made on the Man-Au-Trol Detector for that operation. When all the operations have been completed and all of the function stops set, the machine is then thrown into automatic operation and becomes 100 per cent automatic. Should it be desired to machine an odd part of another design, for any reason, the machine may be thrown out of automatic control, the piece machined manually and then production continued on the part for



which the automatic functions previously had been set, without further adjustments other than setting the original tooling. The ease with which the machine can be changed from manual to automatic operation provides almost unlimited flexibility, reduces the manual effort required, and makes for finer accuracy.

## SAWMASTER HACK SAW



LOW PRICED

PORTABLE  
SELF-CONTAINED

READY TO WORK

STURDY  
ECONOMICAL

Write for Bulletin  
No. 300

**MILLER-KNUTH MFG. CO. OMaha, Neb.**

# Special Tool Increases Valve Production 100 Per Cent

FOR some classes of work special machine tools are more productive and efficient than standard machine tools because they are designed to do one job. Special tools may be designed to meet the requirements of the job more exactly than a machine which is designed to fit a number of different types of jobs.

Figure 1 shows an Ingersoll 2-Spindle Rotary Table Milling Machine that was built for the Buick Motor Division of General Motors to machine an exhaust manifold valve. The machine, fixtures and cutters were built specially for this particular job. The work was previously done on standard machinery with special fixtures and attachments.

The machine consists primarily of a base carrying a rotary table and a housing carrying a saddle having two

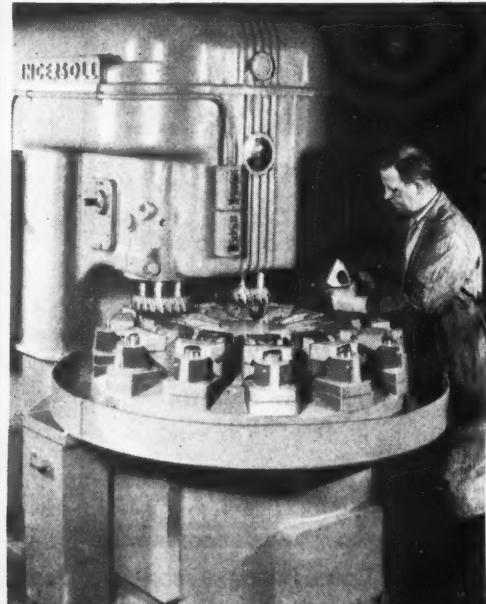


Fig. 1—Illustration Showing Ingersoll 2-Spindle Rotary Table Milling Machine.

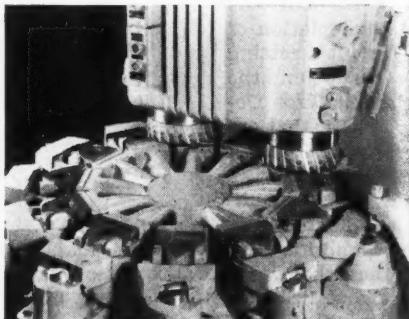


Fig. 2—Closeup view of Rotary Table Showing Workpieces in Position

quill-mounted vertical spindles. One motor is provided for driving the spindles and is located in the frame of the machine. One motor is provided for feed to the rotary table and is located in the base. Push buttons are provided on the right-hand side of the machine for starting and stopping the drive motor. Push buttons are provided on both sides of the machine for starting and stopping the feed motor.

A closeup view of the rotary table is shown in Fig. 2. The workpieces are automatically clamped in the fixture, thus the only work required of the operator is to place a new piece in the fixture and remove a finished piece. The automatic clamping feature enables the operator to keep pace with the production, which is about 165 per hour, net.

The cutters are Ingersoll Shear Clear carbide-tipped cutters. The feed rate is 48 inches per minute.

Fig. 1—Illustration Showing Ingersoll 2-Spindle Rotary Table Milling Machine.

**ECLIPSE ENGINEERING ASSURES -**

# **THE RIGHT DRIVE FOR YOUR END CUTTING JOB**

First, it's engineered right. Second, it's made right! No matter what your production problem, Eclipse is well equipped to design and manufacture the tool required. Eclipse's radial, pin, quick-detachable taper, square taper and balanced inverted drives are famous for performance. The right Eclipse drive will be recommended to you . . . and we build equally well other special drives to customer specification. Call or write us about your problem today. Eclipse representatives are available in every major industrial area.



Radial Drive



Pin Drive



Quick-Detachable  
Taper Drive



Square Taper  
Drive



Balanced  
Inverted  
Drive

High Speed Steel and Carbide Tipped

**ECLIPSE COUNTERBORE CO.**  
*Founded thirty five years ago*

DETROIT 20, MICHIGAN

# Cutting Operations Combined to Increase Crankshaft Production

SEVERAL individual cutting operations on crankshafts have been combined in a single cycle in order to increase the productive capacity of the LeBlond DM Automatic Crankshaft Lathe shown in the accompanying illustration. These operations consist of finish turning the stub, flange, and intermediate line bearings on a six-cylinder automotive crankshaft.

The lathe is designed primarily as a four-station indexing machine and is built on the revolving drum principle for finish turning all line bearings. The use of this type of lathe has eliminated completely the need for rough grinding operations. The fourth station,

loading, makes possible continuous uninterrupted operation of the machine without time lost for loading and unloading.

The lathe is powered by combination electric-hydraulic motor units, controlled by readily accessible electric push buttons. A red and green control light system is provided which not only protects the operator, but also gives a visual check of the progress of the work.

The production data on the crankshaft are as follows:

Total feed time	1.410 minutes
Return traverse	.054 minutes
Indexing	.036 minutes

Total machining cycle 1.500 minutes

Hourly production—40 gross for 60-minute hour  
Hourly production—30 net for 48-minute hour.

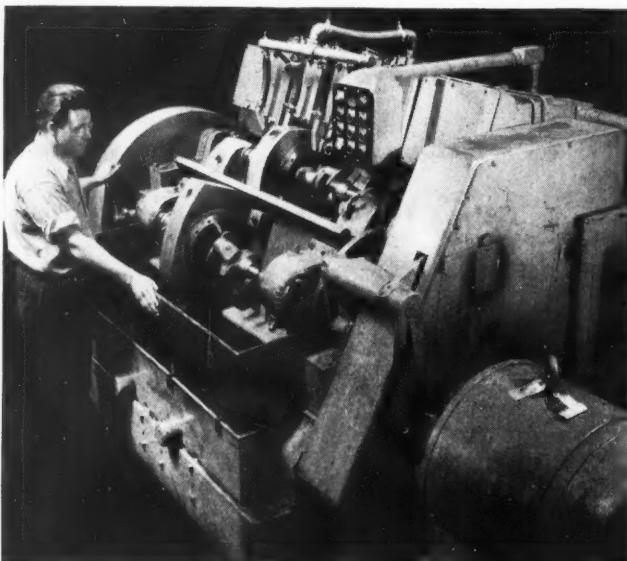


Fig. 1—View of LeBlond DM Automatic Crankshaft Lathe designed especially for finish turning stub, flange, and intermediate line bearings on a six-cylinder automotive crankshaft.

YOUR SURFACE GRINDERS, PLANERS AND BORING  
 MILLS DO BETTER WORK AND MORE OF IT PER  
 DAY WHEN YOU EQUIP THEM WITH THESE . . .

## POPE PRECISION SPINDLES

*with Sealed-In  
Lubrication*



This POPE Direct Motorized Cartridge Type Spindle is for users of 6" x 18" Surface Grinders. It produces superior finishes, roughs off surplus metal fast, runs cool and delivers full 1 HP at the wheel.

*Bulletin S-2* contains specifications and useful information about this and many other types of Pope Precision Spindles. Write for it.

# POPE

TRADE MARK REG. U. S. PAT. OFF

**POPE MACHINERY CORPORATION**  
 ESTABLISHED 1900  
 661 RIVER STREET • HAVERHILL, MASSACHUSETTS  
**BUILDERS OF PRECISION SPINDLES**

This POPE Heavy Duty  
Motorized Spindle

is for surface grinders, planers, boring mills and many other machine tools. It comes in sizes from  $\frac{3}{4}$  HP to 20 HP and from 900 to 3600 RPM. It is available with flange or tapered nose for quick mounting of wheels or tools.

*Catalog No. 58* contains all data for quick selection of the right Spindle and Wheel Holder or Cutter Head for your work. Write for it

No. 53

# Profile Milling Applied to Roll Pod Machining

PLUNGE cut and contour milling successfully applied to machining rolling mill roll pods represents a definite advance in simplifying this specialized and difficult class of work. The new machining method centers around the use of a specially designed roll holding fixture on a floor type Giddings & Lewis horizontal boring, drilling and milling machine equipped with a synchronized dual hydraulic tracer control attachment. Tungsten carbide cutters designed for plunge cut boring and plunge cut profiling rapidly remove metal in all roughing operations. Contour milling with a sectional slab mill then gives required accuracy and final finish to the roll pods.

To appreciate the machining problem confronting roll manufacturers, consider the typical pod shapes illustrated by templates in Fig. 1. Both single and double radius pods are shown. These are just a few of the forms that can be readily duplicated in the roll end when plunge cut and contour milling methods are used.

Fly cut boring has been the conventional method used for rough shaping roll pods by many of the country's leading producers of rolls. Analysis

proves this to be a laborious and time-consuming procedure, many hours of hand grinding being required to produce the final finish.

First, a sweeping cut is made to remove as much metal as possible from between roll teeth or lobes. Secondly, it is necessary either to reset the fly cutter, or to change cutters to produce the desired bottom radius. This second operation results in high points on either side of the cut. These points must be removed in the third operation by a series of shallow fly cuts. After as much metal as practical has been removed in this manner, the roll is sent to the hand grinder for finishing. High points still existing must then be ground off to produce final finish.

Overall time for machining pods varies according to skill of the boring machine operator and number of cuts required to remove the bulk of the metal. Time taken for hand grinding depends on how much remaining metal must be removed to establish a reasonable bearing fit. Allotted time for grinding ranges from  $1\frac{1}{2}$  to  $4\frac{1}{2}$  hours.

As already mentioned, the new method of machining pods by plunge cut and contour milling, as now employed successfully in the roll shop of a large

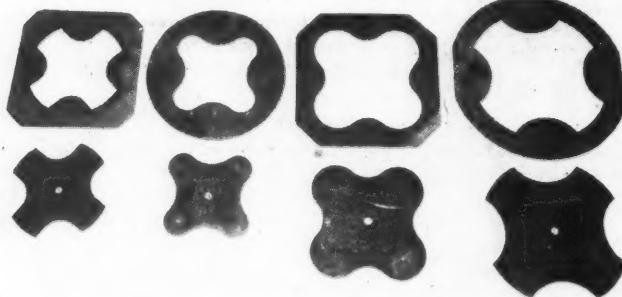


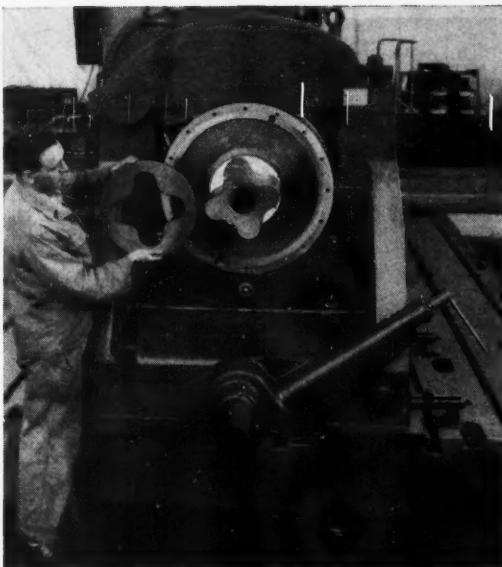
Fig. 1 — These steel templates show variety of pod shapes and sizes possible to machine using a horizontal boring machine equipped with hydraulic tracer - controlled attachment

Fig. 2—This rear roll support is adjustable on its base. In addition, various size bushings can be placed in bearing ring to accommodate different size rolls.

steel company, centers around a roll holding fixture especially designed for this work. This machine accessory or fixture is made up of two components, a forward roll support and rear roll support. When the horizontal boring machine is set up for this work, the fixture supports merely are placed on the machine floor plate and bolted down. An illustration of this device, showing its position in relation to the machine spindle, is presented in Fig. 3.

Bronze bushings are fitted over the roll ends. These in turn are locked in steel bearing rings which rotate on hardened roller type bearings. Fig. 2 shows the rear bearing support with roll end, bronze bushing and roller assembly in position. Changing of bushings in the bearing ring permits mounting of different diameter rolls in the fixture. Handling rolls of various lengths is accomplished simply by moving the rear roll support toward or away from the forward support. The rear support has a hand operated worm and gear to move it on its sub-base. This feature permits rapid final adjustment thus minimizing overall setup time.

Both supports are equipped with over-arm clamps. When open, these permit placing of roll—complete with bushing and bearing assembly—in the fixture. After roll is seated, over-arm clamps are closed and hold down bolts tightened. Thus, accurate adjustment of bearing tension to ensure rigid support of the roll is readily attained.



Mounted on the forward support and forming an integral part of it is the roll rotating mechanism. This is operated by a hydraulic feed motor, through reduction gears. This roll rotating motor is synchronized with a similar motor attached to the machine headstock elevating screw. Both are activated automatically by a solenoid-operated tracer control which follows a steel template.

Incorporated in the design of the rotating mechanism is a 360-tooth spur gear mounted on the steel bearing ring.

A roll may be rotated at varying speeds to provide proper feed for contour milling operations. Also it can be indexed and locked for plunge cut boring and spline milling. The locking device, when meshed with the ring gear, provides a positive means for obtaining correct roll graduations through 360 degrees. An interlocking switch is provided as a safety factor and when the gear is locked it is impossible to apply power to rotate the roll.

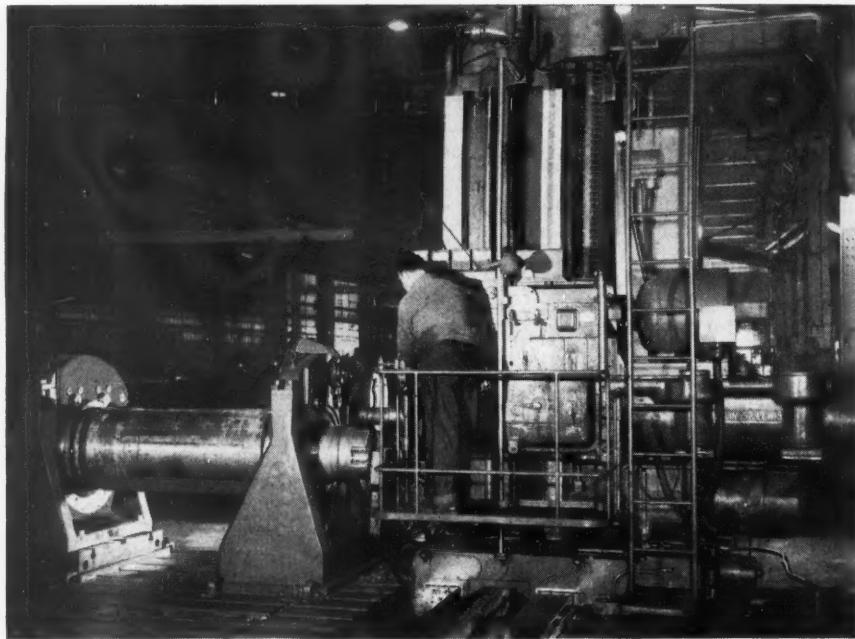


Fig. 3—Overall view of complete setup used to machine rolls on floor-type horizontal boring, drilling and milling machine

In order to mill splines on the roll pod, or to cut keyways, it is necessary to reset the two roll holding fixtures by turning them 90 degrees. The roll then will lie at right angles to the machine spindle. Any number of splines can be milled in the pod, depending upon the indexing.

#### Synchronized Tracer Control Attachment

Using a dual hydraulic tracer control attachment on the horizontal boring machine, an infinitely variable combination of feeds is possible. Two hydraulic motors control these power

## LUERS

### PATENTED CUTTING OFF TOOL HOLDERS PATENTED CUTTING OFF BLADES

ONLY the PATENTED construction of LUERS cutting off BLADES permits normal expansion of bursting chips — MEANS MAXIMUM CUTTING EFFICIENCY.

Manufactured by

J. MILTON LUERS, 12 Pine Street, Mt. Clemens, Mich.

Produced under License Issued by John Milton Luers Patents Inc.

**Diecarb**

FOR PUNCHES  
AND DIES  
BLANKING DIES  
FORMING DIES

**FIRTHALOY**

**THE  
FIRTHITE  
WAY**

**FIRTHITE**  
CARBIDE  
STYLE D

**PROFITS**

**Reliable Guide posts  
on the road to profits**

Regardless of whether your production problem is tips, cutting tools, dies, punches, wear resisting parts or other applications, there is a Firthite Way to better quality and to minimum costs. We have a branch office near you.

Call **Firth Sterling**  
**STEEL & CARBIDE CORPORATION**

McKEESEPORT, PA. • NEW YORK • HARTFORD • PHILADELPHIA • PITTSBURGH • CLEVELAND • BUFFALO  
DAYTON • DETROIT • CHICAGO • LOS ANGELES • In Canada—Firth Engineering & Sales, Ltd.

**NOW made of  
M-2  
HIGH SPEED  
STEEL**



**MILFORD  
ALL-HARD REZISTOR  
POWER BLADE**  
**is a real Post-War blade!**

Yes...today's REZISTOR is a post-war development...made from a modern high speed steel known as M-2. Newly perfected heat treatment has made possible new high cutting records.

The REZISTOR of 1940 was a splendid blade...but...the REZISTOR of 1948 will show far greater endurance, make more straight cuts per blade, and cut faster. Large quantities of blades, tested in our own laboratories, and on several makes of hack saw machines tell us this is true. They are our proving grounds. Your own machines are yours.

The proof...compare MILFORD REZISTOR with any high speed steel blade you now use.

- 30% greater endurance
- 28% more straight cuts
- 5% faster

Order from your mill supply distributor. He is always ready to serve your needs for all factory and mill supplies, as well as MILFORD hacksaw and band saw blades.

**MILFORD**

SAWS  
SAW BLADES  
REZISTOR AND HIGH SPEED STEEL  
HACK SAW AND BAND SAW BLADES

THE HENRY G. THOMPSON & SON CO.

Saw Specialists Exclusively for  
Over 70 Years  
New Haven 5, Connecticut, U.S.A.

feeds. Both are synchronized to respond to the solenoid tracer control.

One motor rotates the roll. The other raises and lowers the machine headstock. This combination of feed mo-

**Table I—Typical Job Facts and Time Study for Machining Rolls**

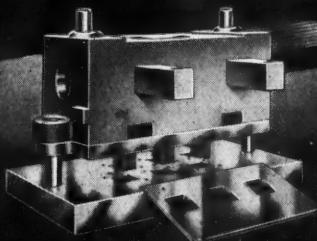
No. 1	Diameter of roll .....	15½ in.
	Radius .....	4 in.
	Length of pod .....	
	One end .....	13¾ in.
	Opposite end .....	8¾ in.
	Depth bottom root dia.....	10.4 in.
	Former machining time to complete	
	145 hr. 38 min.	
	Present machining time to complete	
	21 hrs. 47 min.	
No. 2	Diameter of roll .....	7½ in.
	Radius .....	1 in.
	Length of pod .....	
	Both ends .....	4 in.
	Depth bottom root dia.....	4 in.
	Former machining time to complete	
	8 hr. 32 min.	
	Present machining time to complete	
	4 hr. 39 min.	
No. 3	Diameter of roll .....	9.4 in.
	Radius .....	1.27 in.
	Length of pod .....	
	Both ends .....	6½ in.
	Depth bottom root dia.....	6 in.
	Former machining time to complete	
	25 hr. 53 min.	
	Present machining time to complete	
	16 hr. 10 min.	
No. 4	Diameter of roll .....	7 in.
	Radius .....	2 in.
	Length of pod .....	
	Both ends .....	5½ in.
	Depth bottom root dia.....	4½ in.
	Former machining time to complete	
	11 hr. 48 min.	
	Present machining time to complete	
	5 hr. 30 min.	
<b>Typical Cutter Data</b>		
Diameter of mill .....		
3 in.		
Feed .025 in.		
Speed 250 R.P.M.		
Depth of cut $\frac{1}{4}$ in.		

tions will produce any contour or pod shape through template control.

Steel templates are mounted on a revolving face plate which rotates at the same rate as the roll. A stylus, identical in size to the cutter on the tracer arm, follows this template. Its resulting rise and fall activates a solenoid which in turn controls the hy-

For  
 "Near Neighbor" Service

**From Foundry to Finish**  
 THROUGH A CYCLE OF SPECIAL MACHINES...  
**...SPECIAL SKILLS**



# PRODUCTO

*Special*  
**DIE SETS**

Magnetic chuck on Hanchett grinder holds two die beds (38" x 58" each) for vertical surface grinding to a satin finish.

There's no need to "roll your own" when Producto can supply you with Specials of the highest quality in the shortest time.

Through long experience, we have developed custom-built machinery, specifically geared to handle close tolerance work on all types of die-sets from small, intricate designs to giants of several tons.

"Near Neighbor Service" from 26 cities gives you speed and convenience . . . provides personal discussion of your requirements through telephones listed herewith.

**THE PRODUCTO MACHINE COMPANY**

960 Housatonic Ave.  
 Bridgeport 1, Conn.  
 Tel. 4-9481



Phone for "Near Neighbor" Service

draulic motors which in their turn control the cut and speed at which the roll revolves.

Undoubtedly the most advantageous feature of the horizontal boring machine in any steel mill machine shop is its unusual flexibility in handling a broad range of work. Machining roll pods is only one of many jobs which can be handled by this versatile machine tool. The fixture and attachments heretofore mentioned may be used on standard horizontal boring machines. They can be rapidly adapted to perform different profiling operations, and are removed equally fast when this type of work is completed. The machine is then ready to perform a wide range of boring, drilling, milling, tapping and turning operations.

Through the different standard movements of the floor type machine, practically any work pattern can be

handled provided that the part is capable of being placed within the range of the machine spindle. Oftentimes this is simplified by the longitudinal traverse of the machine column on its runway, vertical headstock movement and in-and-out spindle feed. As a result of the machine's versatility and feed movements, it is possible to repair and maintain all kinds of mill equipment, to recondition and rebuild old rolling mills and to fabricate all types of mill components, without resorting to use of special or single purpose machine tools.

In addition to having the necessary capacity to handle all types of steel mill work, the horizontal boring machine cuts down the overall or floor-to-floor time. An actual record of the time required to machine rolls is shown in Table I. Comparable savings in time can be anticipated on other work.

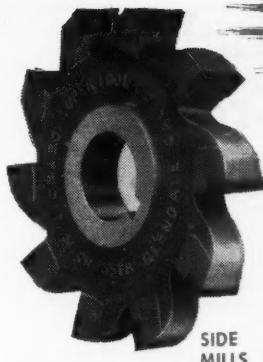
**LINLEY**

FOR NOISELESS, HIGH SPEED RIVETING

Rotary spinning principle shapes uniform heads, silently... capacities up to 3/8 inches diameters. Adjustable spindle stroke, controlled pressure... double row radial thrust bearing supports spindle, assures long life. Table elevating screw prevents slipping. Six floor or space-saving bench models...sturdily built for trouble-free operation under severe production schedules.

FOR COMPLETE INFORMATION,  
WRITE FOR BULLETIN.

**LINLEY BROTHERS CO., 661 STATE ST. EXTENSION  
BRIDGEPORT 1. CONNECTICUT**

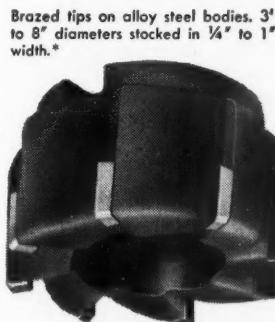


SIDE  
MILLS

FROM THE MOST COMPLETE  
STANDARD CARBIDE  
TOOL LINE -

## CARBIDE MILLING CUTTERS

FOR EVERY JOB



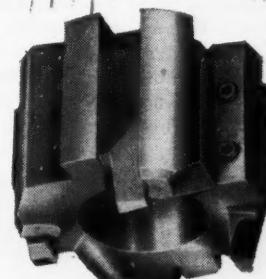
SHELL END MILLS

Brazed tips on alloy steel bodies. 1 1/4" to 6"  
stocked.\*



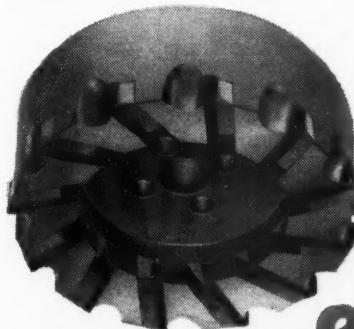
END MILLS

2 to 8 flutes 1/4" to 4". Straight,  
taper, and special shanks.  
Ruggedly designed for heavy  
cuts.\*



ROTARY BROACHES

Step tooth design means lighter  
cut for each blade and higher  
speeds. Stocked 4" to 6".\*



INSERTED BLADE  
FACE MILLS

Solid carbide blades. Rugged  
design. Easy blade interchange.  
No screws in body. 4" to 14"  
stocked.\*

STANDARD AND SPECIAL

# SUPER

*Carbide Tools*

**SUPER TOOL COMPANY**

21650 Hoover Rd., Detroit 13, Michigan

5210 San Fernando Rd., Glendale 3, California

\*Specify, when ordering, type  
of material to be machined.

# Special Milling Machine Increases Truck Crank-shaft Production

THE Kearney & Trecker milling machine shown in the accompanying illustration was primarily designed to expedite and simplify the milling of 8 locating pads on crankshafts of various sizes. By means of a special fixture, the crankshafts are held between hydraulically operated centers which clamp them by means of hydraulically operated equalizing clamps. The fixture centers can be moved apart or together in order to accommodate crankshafts of various lengths.

Six horizontal and two vertical spindles are mounted in a horizontal sliding head having hydraulic feed and rapid traverse movements on a rectan-

gular way. All spindles are mounted in eccentric quills and are provided with variable speeds through pick-off gears.

Like the head, the table is equipped with hydraulically controlled feed and rapid traverse movements which can be varied within a suitable range.

The cutting cycle is completely automatic. The operator has merely to load the workpiece on two V-blocks and engage the hydraulic levers controlling the centers and equalizing clamps. The cycle of operation is as follows:

1. Load crankshaft
2. Centers pick up crankshaft
3. Crankshaft is located readily by a swing locator from a prick punch mark.
4. Equalizing clamps are engaged.
5. Head feeds forward to depth and table feeds left.
6. Head and table rapid traverse return.
7. Unclamp fixture and unload crankshaft.

High speed steel shell end milling cutters are used. A production of 69 pieces per hour at 85 per cent efficiency is readily obtained with this equipment.



Kearney & Trecker Special 8-Spindle Milling Machine for Truck Crank-shaft Production



## Sandpaper in the Kitchen

THE BOILED EGG YOU HAD FOR BREAKFAST THIS MORNING WAS PROBABLY CLEANED UP BY JEWELITE ABRASIVE CLOTH. A FINE-GRIT CLOTH, CUT IN SPECIAL SHAPES OR MADE INTO BANDS, HAS BEEN ESPECIALLY DESIGNED FOR THIS DELICATE JOB, AND IS USED BY MANY POULTRY FARMS. THIS IS ONLY ONE OF THE UNUSUAL SANDING PROBLEMS THAT AP ENGINEERS HAVE SOLVED.

AND THE WOODEN BOWLS FOR THE CHEF'S TOSSED GREEN SALAD ARE GIVEN THAT SMOOTH INSIDE FINISH WITH JEWEL GARNET. MANUFACTURERS HAD BEEN TROUBLED BY UNEVENNESS AND GOUGED EDGES. AFTER SWITCHING TO JEWEL GARNET BELTS, WITH THE EXCLUSIVE VELVET JOINT, THE PROBLEMS DISAPPEARED AND PRODUCTION WAS DOUBLED.



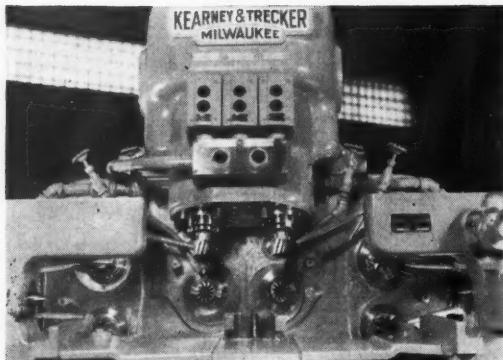
JEWEL ABRASIVES ARE ALSO USED TO FINISH THESE EFFICIENT AUTOMATIC DISHWASHERS. THE CORNERS AND EDGES OF THE METAL CABINETS ARE POLISHED WITH #80 JEWELOX CLOTH S73. THE MANUFACTURER REPORTS, "THIS CLOTH IS THE BEST WE'VE EVER USED."

SO REMEMBER JEWEL WHEN YOU ORDER COATED ABRASIVES. THERE'S A JEWEL PRODUCT FOR EVERY POLISHING AND GRINDING NEED, AND PROPERLY USED JEWEL ABRASIVES WILL SPEED YOUR WORK, CUT YOUR COSTS!



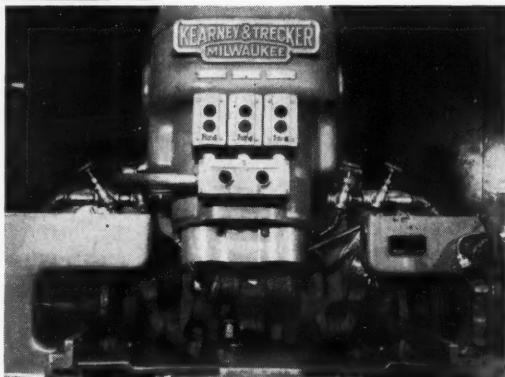
# Abrasive Products, Inc.

SOUTH BRAINTREE 35, MASSACHUSETTS - MAKERS OF JEWEL COATED ABRASIVES



(Left)—Closeup view of Special 8-Spindle Milling Machine for Truck Crankshaft Machining

(Below)—View showing Crankshaft in Position on Special 8-Spindle Milling Machine



Through the use of this machine the crankshaft manufacturer is able to eliminate a considerable amount of work-piece handling and a concern for holding cutter size on the arbor gang setups formerly employed. Arbor gangs themselves have been eliminated in favor of fixed cutter position for each surface to be milled.

In addition, the Kearney & Trecker Special 8 - Spindle milling machine is engineered and designed in such a manner that it can be successfully applied to the machining of various sizes of crankshafts. Changeover from one size crankshaft to another may be accom-

plished in a minimum amount of time.

The quality of the finished product has been greatly improved through the simultaneous cutting operation of the machine.

**COMET**

**INTERNAL THREADING  
AND BORING TOOLS**

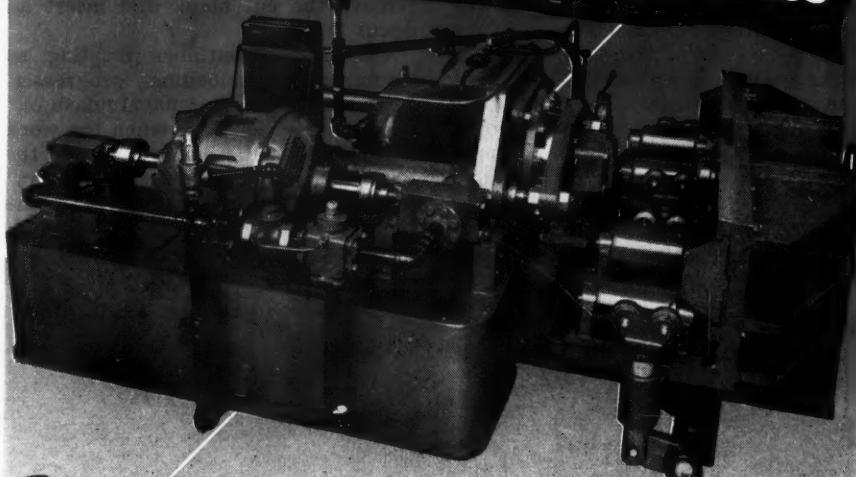
For holes from  $\frac{1}{8}$ " upwards, 15 different sizes. The accurate thread angle is maintained through each sharpening until tool is entirely worn down. Small head-long cutting surface for regrinding.

**COMET TOOL CO.**  
738 B'way., New York 3, N. Y.

**Write for Complete Data.**

*Smooth...Fast...Accurate*

THE R. D. WOOD STRAIGHTENING PRESS



*For STRAIGHTENING SHAFTING ... AXLES ... ROUND BARS ... RODS*

Modern in design with quality construction this 200-ton R. D. WOOD Straightening Press has a *plus factor* . . . increased production. Heavy welded steel makes up the press frame which carries individual cast steel main and pull-back cylinders. Length of press table is 73" with 13" of gap between dies. On the vertical frame face the resistance blocks are movable. The table has four heavy stationary

rollers for shifting shafts lengthwise, and four sets of lifting and turning rollers air-cylinder operated. An adjustable stop, which will take full press load, is located centrally on the press frame to prevent over-bending. High and low pressure pumps, operated by a 20-h.p. motor, provide a ram speed of 72" per minute for low pressure closing. High pressure ram speed is 8.5" per minute. Send today for literature.

HYDRAULIC PRESSES AND VALVES • AIR COMPRESSORS • CYLINDERS • CYLINDER MOTORS • INTENSIFIERS



EST. 1803

*R. D. Wood Company*  
PUBLIC TRUCK BUILDING, THREE MILE CREEK, PHILADELPHIA, PA.

# One Machine - One Operator - One Hour - 74 Internal Helical Gears

INCREASING the production of internal helical gears from 6 per hour on a single-spindle machine to 74 per hour by means of the Fellows No. 10 Gear Shaper shown in Fig. 1 has been the completely satisfying experience of a large manufacturer of automobile transmissions. This machine is equipped with automatically operated diaphragm chucks, which release and clamp the work as the turret reaches the loading position. Each unit stops automatically as it reaches the load-

ing position, enabling the operator to remove the cut blank and insert an uncut blank.

The turret continues rotating as loading and unloading progresses. Lights on the control panel "flash on" notifying the operator when the work is unclamped and clamped. When the work is clamped, he pushes the "start" button on the "unit" to start it operating again. As shown in Fig. 2, loading and unloading is being accomplished on one "unit" while the remaining 9

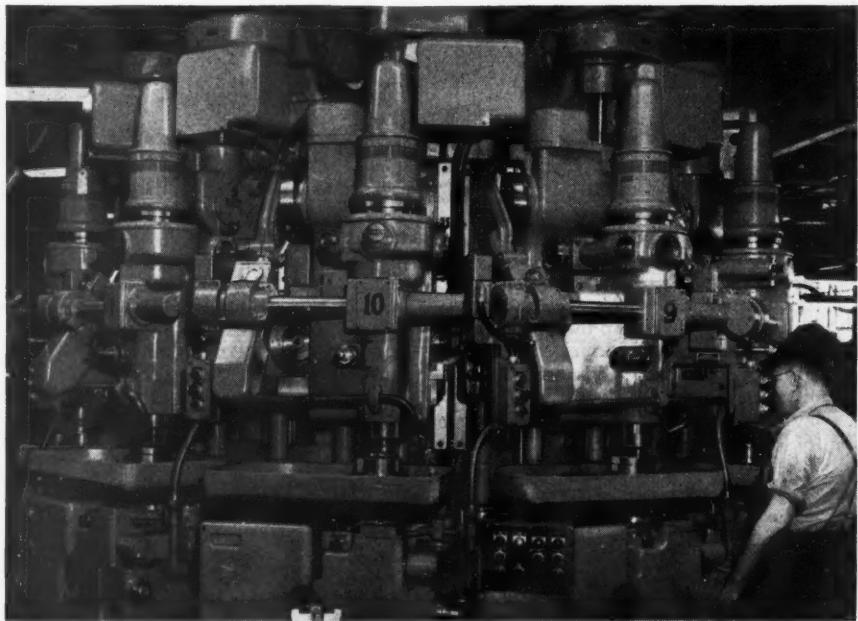
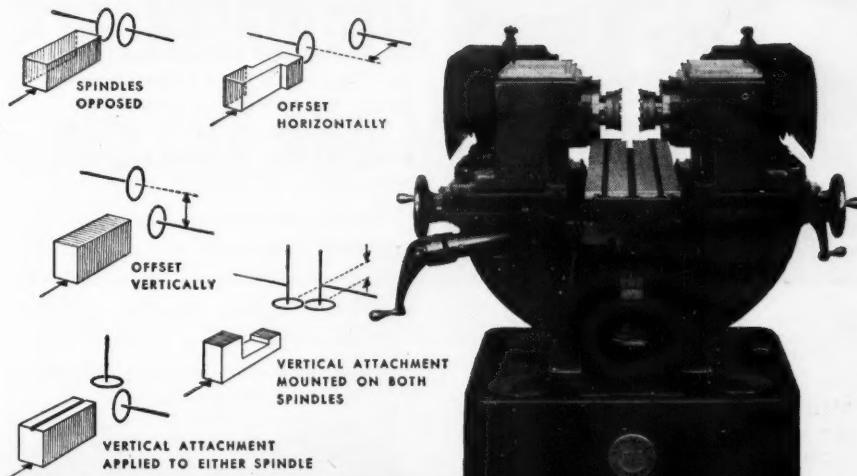
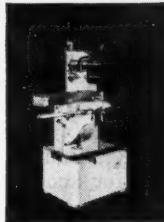


Fig. 1—View of Fellows No. 10 Rotary Gear Shaper cutting Internal Helical Gear for an automobile transmission

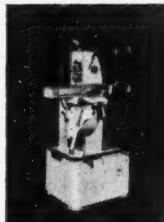
# ANNOUNCING...



THE *Nichols*  
TWIN MILLER



Also available are Nichols Two Spindle Hand Millers with identical or opposed spindles and with or without pneumatic feed.



For operations such as those diagrammed at the left, the Nichols Twin Miller offers exceptional economy with greatly increased output. Its rugged, precise construction combined with ample power is ideal for machining simultaneously two surfaces which must be held in accurate relation. The preloaded ball bearing spindles may be positioned horizontally, vertically, and crosswise, independently of each other. A solenoid operated air cylinder feeds the table automatically. Fifteen spindle speeds between 55 and 2080 rpm are available. Condensed specifications are listed below. For full details write Nichols-Morris today.

#### CONDENSED SPECIFICATIONS

Table, working surface.....	8½" x 30"
Table travel — cutting stroke.....	12"
Motors.....	1725 RPM AC reversible 1 HP
Maximum height center of spindle above table.....	12"
Maximum offset of spindles (horizontal) .....	9"
Maximum distance between spindle noses (across table) .....	16"
Overall Dimensions .....	4' x 5' x 4'7"

MANUFACTURED BY  
**W. H. NICHOLS COMPANY, WALTHAM, MASS.**  
NATIONAL DISTRIBUTORS NICHOLS-MORRIS CORP., 50-H CHURCH ST., NEW YORK 7, N.Y.



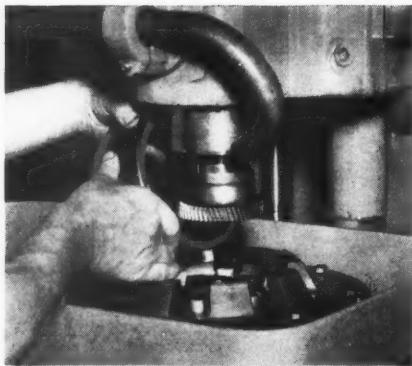


Fig. 2—Operator Removing finished Gear from Diaphragm Type Chuck. Note Cutter-spindle is at top of stroke to facilitate removal.

"units" are operating. In this manner production is not completely interrupted.

The cam on the base for operating the work-holding fixtures can be designed to suit the cutting cycle, or the time required for the turret to make one complete revolution. For instance, if the gear being cut can be finished, say in three minutes, the cycle time for the turret would be  $3/9 \times 10$ , or  $3\frac{1}{3}$  minutes; therefore loading time would be  $\frac{1}{3}$  minute or 20 seconds; this, of course, would include the interval necessary to unclamp and clamp the work.

Where necessary, especially when cutting internal gears, provision can

be made through combined electrical and mechanical means for stopping cutter reciprocation at the top of the stroke, so that the work can be quickly removed and inserted, without any extra effort on the part of the operator. This is an added operating convenience for increasing production.

The specifications on the gear as shown in Fig. 3, which is made from a fine grade of cast iron, are as follows:

Number of teeth	79
Diametrical pitch	16
Pitch diameter	5.1313
Pressure angle	$20^\circ$
Helix angle	$15^\circ 47' 43''$
Face width	1 $\frac{1}{4}$ inches

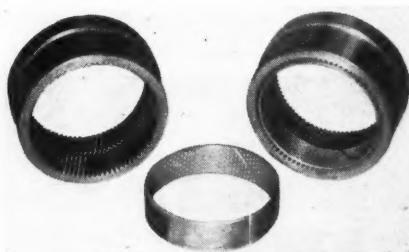
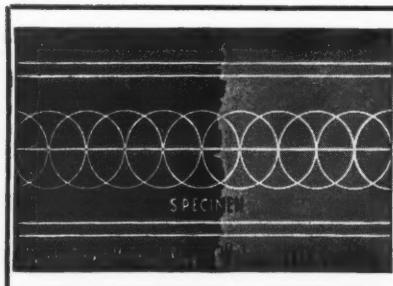


Fig. 3—Views of Internal Helical Transmission Gear. One row of teeth act as oil grooves.

It is finished in two cuts taken at the same work setting, and is machined to close limits for accuracy of tooth profile and spacing.



## DYKEM STEEL BLUE

Stops Losses in Making Dies and Templates

Simply brush on, right at the bench; ready for the layout in a few minutes. The dark blue background makes the scribed lines show up in sharp relief, and at the same time prevents metal glare. Increases efficiency and accuracy.

Write for full information.

**THE DYKEM COMPANY**

2301F NORTH 11th ST. ST. LOUIS, MO.  
(In Canada: 2466 Dundas St., West, Toronto, Ont.)

**YOU GET ALL THESE ADVANTAGES IN**

# **NICHOLSON ROTARIES**

## **HAND CUT AND MACHINE GROUNDED**

**STYLES** A wide range of shapes and sizes from which to choose. Name almost any rough or delicate finishing operation and Nicholson will come up with a Rotary File or Bur that will save both time and money.

**STEEL** Nicholson regular Rotary Files and Burs are made from a special grade of high-speed steel, expertly hardened and carefully shaped.

**CODE SYMBOLS** The Nicholson system of identification makes for easy ordering. The first symbol identifies the style or shape of the head; second, the diameter of the head; third, the length of the head; and fourth, the coarseness of the cut.

**CUTS** Available in either Hand Cut (for use on tough, dense materials) or Ground-from-Solid (for non-ferrous metals). Expert hand-cutters form the teeth of Nicholson Rotary Files; precision machines grind the flutes of Nicholson Burs.

**SHANKS** Standard shanks are  $\frac{1}{4}$ " in diameter. Nicholson also has a complete line of Rotary Files and Burs with  $\frac{1}{8}$ " shanks. These "little fellows" are ideal for relatively delicate power filing.

**TRADE-MARK** The famous Nicholson trade-mark is your assurance of quality —of rotaries carefully shaped, centered, cut or ground and hardened. Available through your industrial distributor.

**NICHOLSON FILE CO.**  
93 Acorn Street, Providence 1, R. I.  
(In Canada, Port Hope, Ont.)

**NICHOLSON ROTARY FILES**

**HAND CUT AND MACHINE GROUNDED**

**HIGH SPEED STEEL AND CARBIDE**



## Here's why you can grind for less

### with the Sensational 32 ALUNDUM Grinding Wheel

**B**Y an ingenious Norton-developed and patented process the grains of 32 ALUNDUM abrasive form in the electric furnace in a fluid matrix. This allows each grain to grow into a single, complete crystal—strong in shape and with many sharp points on all sides. Result: a faster and cooler cutting action.

And the matrix serves a dual purpose for it also absorbs the impurities present in the melt. Thus 32 ALUNDUM abrasive is over 99% pure fused alumina—more actual cutting material than in any other abrasive. Result: less dressing, longer wheel life.

By a complicated chemical process the matrix is dissolved away and the released grains are then washed and screened to size. No crushing is necessary.

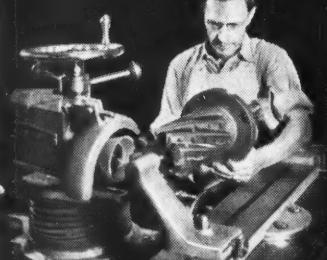
That this sharper, purer abrasive really cuts grinding costs is being demonstrated every day in thousands of plants.

Are you taking advantage of 32 ALUNDUM grinding wheels?

**NORTON COMPANY, WORCESTER 6, MASS.**

NEW YORK • DETROIT • CHICAGO • CLEVELAND • PITTSBURGH • PHILADELPHIA  
HARTFORD • DENVER • LOS ANGELES • Distributors in all principal cities

### Use "32" for these grinding Jobs



TOOL



INTERNAL



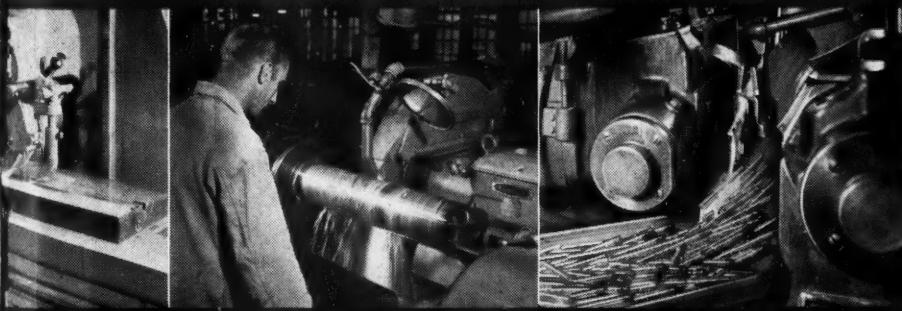
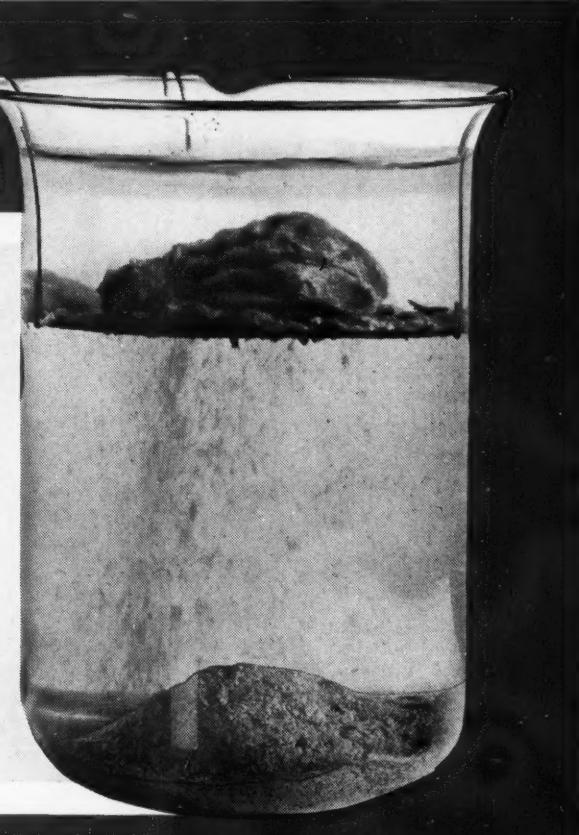
SURFACE

### A Demonstration

Here you see 32 ALUNDUM abrasive as it comes from the electric furnace—the individual crystals imbedded in the matrix in which they "grow." As this matrix is dissolved the grains are released—ready for screening to size.

### See It Yourself

You'll find this demonstration and many more in the new Norton motion picture on 32 ALUNDUM abrasive. Arrange for a showing of this 16mm. Kodachrome sound film in your plant—no obligation.



SURFACE

CYLINDRICAL

CENTERLESS

**Nicholson FILES for DIE CASTINGS**

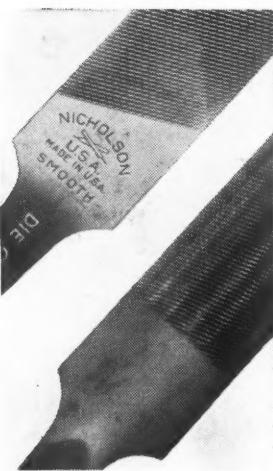
**"KNOW  
YOUR FILES  
AND CUT COSTS"**

\* It's the cost of the work-  
man's time that counts in  
filing operations. Save these  
advertisements.

Prepared by Nicholson File Co.



**Mill Bastard Die Cast File**



**Half Round Die Cast File**

**FUNCTION OF DIE CAST FILES.** Die castings of aluminum, magnesium or zinc alloy present special problems under which regular purpose files do not stand up as they should when removing webs, fins and flashing, or filing thin sections, sharp corners and edges. Regular purpose file teeth also have a tendency to clog up rapidly.

While Nicholson and Black Diamond Die Cast Files have the same number of teeth per inch as the regular Mill Bastard file, their teeth are specially shaped and sharpened to cut fast and without excessive clogging. Die Cast file teeth are also made extra strong on sides and edges to prevent their "shelling off" or "breaking out" under severe use against obstinate fins, corners or other projections.

**POPULAR TYPES OF DIE CAST FILES.** The Nicholson or Black Diamond Mill Bastard Die Cast File is single cut. The Half Round is double cut on its rounded side as well as on its flat side, thus permitting comparatively fast stock removal. But since it is made in Smooth instead of Bastard cut, it also produces a good finish.

**HOW TO USE DIE CAST FILES.** Light to medium pressure should be applied in filing small die castings; medium to heavy on large ones. A right-toward-left stroke generally should be used.

**IDENTIFICATION AND SIZES.** Nicholson and Black Diamond Die Cast Files are stamped "Die Cast" on tang. Regularly furnished in Mill Bastard and Half Round in 6", 8", 10", 12" and 14" lengths through your industrial distributor.

**FREE 48-PAGE BOOK, "FILE FILOSOPHY," tells about many special-purpose files and includes valuable information about files in general. SEND FOR IT.**



**NICHOLSON FILE COMPANY**

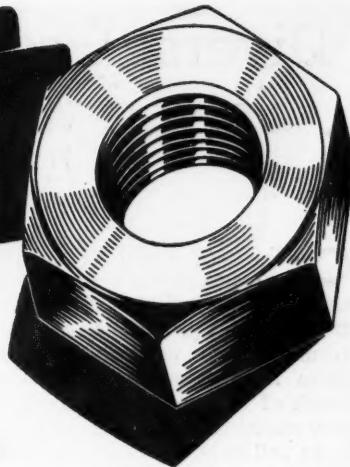
48 Acorn St., Providence 1, R. I.

(In Canada, Port Hope, Ont.)



**NICHOLSON FILES FOR EVERY PURPOSE**

**HERE'S  
HOW...**



**HY-PRO ENGINEERING**  
**increased production from**  
**1,000 pieces per tap to 12,000 pieces per tap**

**PART:** Check nut for air-conditioning fan blade.

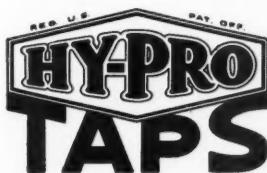
**PROBLEM:** Stringy consistency of 1020 steel caused the 3 and 4 flute taps to pick up and seize often breaking the tap on the 1st or 2nd piece. Production never exceeded 1,000 pieces per tap. Did the Hy-Pro Sales Engineer think it possible to design a tap that would increase output per tap?

**HY-PRO SOLUTION:** Samples sent to the Hy-Pro Engineering Department were studied and tested. They suggested using a two flute spiral point tap with a special Hy-Pro finish. Manufacturer reports average production per tap now exceeds 12,000 pieces.

Above is a typical example of how the Hy-Pro Sales Engineer can help increase threaded-hole production. His expert engineering counsel backed by the most up-to-date tap production methods combine to solve tapping problems rapidly and profitably.

Let Hy-Pro solve your tapping problem — call a Hy-Pro Sales Engineer today.

*Order from your Distributor*



**HY-PRO TOOL CO.**

NEW BEDFORD, MASSACHUSETTS

A SUBSIDIARY OF CONTINENTAL SCREW COMPANY



# Diverse Production Problems Solved with Multi-Spindle Automatics

**C**OSt-CONSCIOUS executives are wearing out a good many pencils these days, figuring how to wrest control of their production expenditures from the grip of inflation. Three of them have experience to show that much of the answer can be found in new machine tools, designed specifically to roll back cost factors that have gotten out of hand. The range of production to which a single new design can be applied for that purpose is represented in the widely different problems, confronted separately, by each of three New Jersey manufacturers.

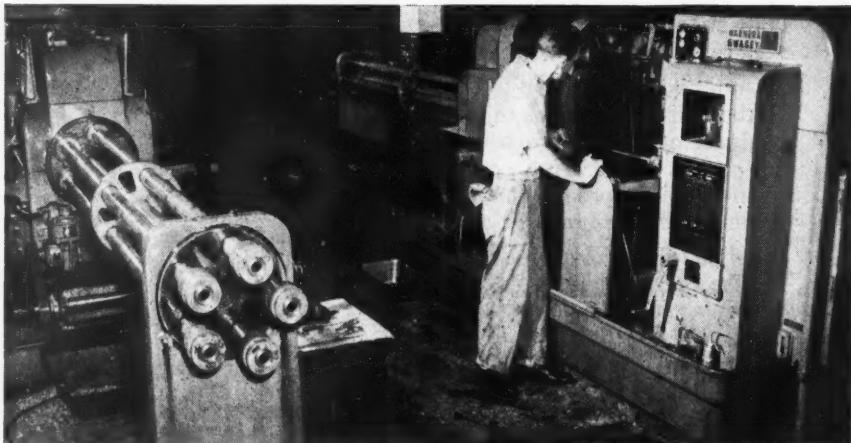
The Hopewell Division of the Rockwell Manufacturing Company was being converted from a feeder plant to the production of end items. From making small parts for registers and

other recording devices used by gas companies, it was up to Division Manager Herbert S. Rockwell to take over production of these entire items, plus valves and similar precision fittings.

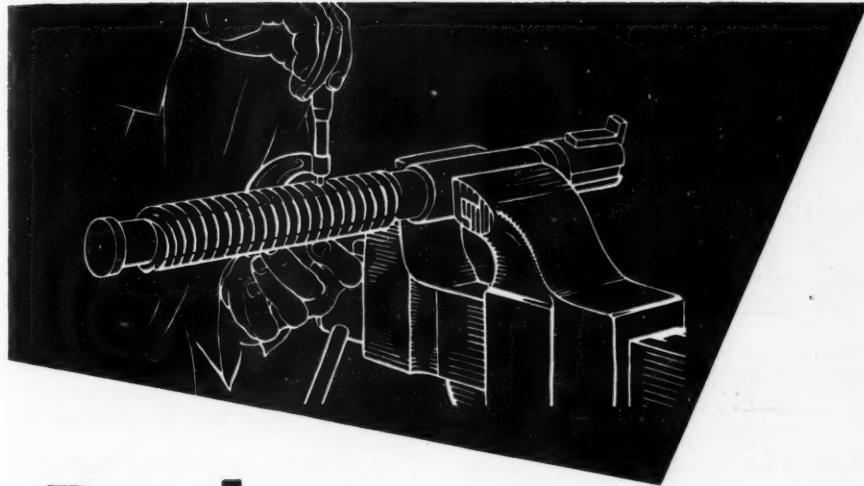
Single spindle automatics, on which he had depended, were a little short of the capacity needed. Yet most larger equipment was equally out of range.

An entirely different problem confronted C. L. Ritchie, vice president and general manager of the Orange Roller Bearing Company, Inc. The products of that industry still sell at about the 1936 price level. But wages alone are up 115 per cent and material costs have risen 45 per cent. Additionally, such items as diamond cutters have tripled and even quadrupled.

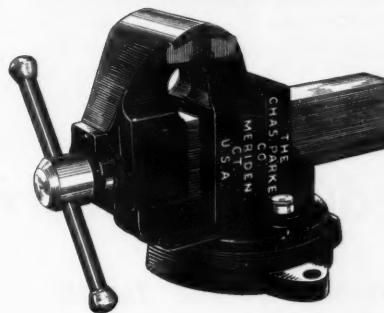
According to Ritchie, such inflated



View of two Warner & Swasey 5-Spindle Automatic Bar Machines installed in the Hopewell Division, Rockwell Mfg. Co. plant.



# Parker



...and it's a bear for action on production, maintenance and repair jobs, too! The 360° swivel base, brake-type locking, swings the work to *any* handy point—the renewable steel jaws cover entire top of vise—the solid-cast un-

derportion assures extra strength—and the spring-tension handle is non-pinch. In sizes to suit every job. Coming along soon—a new line of hinged pipe vises and woodworking vises. The Charles Parker Co., Meriden, Conn.

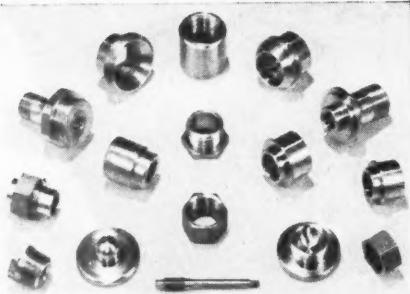


*NOW! Parker vises are packaged  
—factory-new to you.*

## PARKER VISES

*America's First Vise Maker*





These parts of 18-8, MO, and D20 stainless steel are being machined at Alloy Steel Products, Inc. of Linden, N. J. on a Warner and Swasey 5-spindle Automatic Bar Machine.

factors have raised the break-even point on volume to at least double that of pre-war days. The cost of carrying an excess inventory could wipe out profits. Yet long runs were essential for economical results on the type of

multi-spindle automatics with which the plant was equipped.

Again in contrast was the problem that faced J. H. Davis, president of the Alloy Steel Products Company. His production, limited to short runs, was accomplished on turret lathes. More volume was needed, but the plant lacked room for more lathes and the cost of expansion was prohibitive.

"A run of 500 parts might constitute a year's supply of any one of the large number of types, sizes and models, that often are 'tailor-made' to customer's specifications," he said, "and the duplication of special tooling for subletting such jobs simply prorated to a 'dead end.' "

Beyond the immediate solution of these three diverse problems, the executives of each concern sought to equip their plants, not only for the current swing from a seller's to a buyer's market, but for a future competitive

## Reduce Expensive Fixture Costs

**UNIVERSAL ROTARY TABLES** often take the place of costly fixtures. Greatly reduces set-up time on many of your Milling Machines, Drill Presses and Horizontal Boring Mill Operations. Made in 7 sizes.



Dividing attachments are available to fit all Rotary Tables, except the 9" size. One attachment is interchangeable on 3 sizes of Rotary Tables.

**ACME TOOL  
COMPANY**

69 WEST BROADWAY      NEW YORK 7, N. Y.



Many customers have found it possible to supply us with steel in 12 to 24 gauge sheets. In such cases, we will buy the steel from you and ship the pound-for-pound equivalent in

**EITHER**

... any selection of LYON standard products (see partial list below) at regular published prices ...

**OR**

... assemblies, subassemblies, parts, etc., for your product—to your specifications—in an even wider range of gauges—8 to 30.

For complete details, write or ask your nearest LYON District Office.

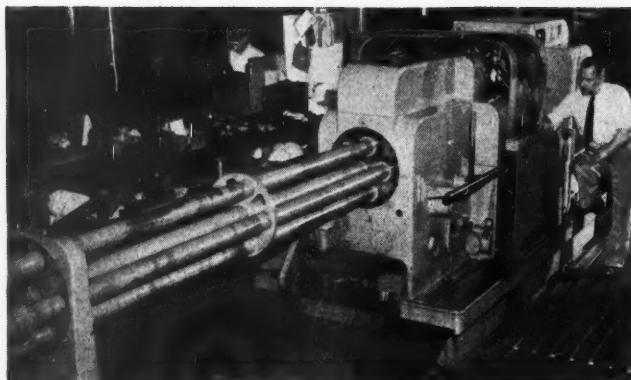
## **LYON** METAL PRODUCTS, INCORPORATED

General Offices: 1038 Monroe Ave., Aurora, Ill.  
Branches and Dealers in All Principal Cities

### A PARTIAL LIST OF LYON PRODUCTS

- |                        |                     |                    |                |                     |                  |
|------------------------|---------------------|--------------------|----------------|---------------------|------------------|
| • Shelving             | • Kitchen Cabinets  | • Filing Cabinets  | • Work Benches | • Tool Stands       | • Tool Trays     |
| • Lockers              | • Display Equipment | • Cabinet Benches  | • Drawer Units | • Service Carts     | • Desks          |
| • Wood Working Benches | • Hanging Cabinets  | • Folding Chairs   | • Conveyors    | • Hopper Bins       | • Stools         |
| • Economy Locker Racks | • Welding Benches   | • Drawing Tables   | • Shop Boxes   | • Parts Cases       | • Tool Boxes     |
|                        |                     | • Storage Cabinets | • Bar Racks    | • Flat Drawer Files | • Sorting Files  |
|                        |                     | • Bench Drawers    | • Bin Units    |                     | • Ironing Tables |





Warner & Swasey 5-Spindle Automatic Bar Machine installed in plant of Alloy Steel Products, Inc., Linden, N. J.

advantage within their separate industries. That meant a re-evaluation of available machine tools on the basis of how much downward revision could be made in the total of all cost factors involved in their finished products.

Ultimately, each of them found their requirements fell within the range of production for which machine tools had not been specifically designed until the Warner & Swasey Company brought out its five-spindle automatic.

In enumerating his savings in machine and man hours, capital outlay, floor area and investment in new equipment, Division Manager Rockwell of the Hopewell Division cites the following data:

"Two five-spindle automatics have a capacity in excess of 10 single spindle machines. The two new units are hand-

led by one operator, who at the same time takes care of all required setups and inspection. With the old equipment it replaced, personnel requirements

averaged 2½ operators and one set-up man, plus inspection time.

"The floor space saved is represented in the requirement for the two five-spindle machines of 240 square feet, as compared with 572 square feet for 10 single spindles, or a saving of 332 square feet. Thereby the related costs of maintenance, heating, lighting and air conditioning could be proportionately reduced.

"As against 10 motors of 7½ horsepower each, to power the single spindle units, one 15 horsepower motor for each of the new units is ample, which allows a reduction in electric bills equivalent to 45 horsepower. In capital outlay, the two new multi-spindle units cost \$32,250, as against a cost of \$57,500 had the 10 single spindle units been duplicated."

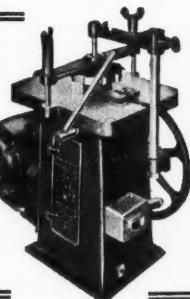
## NO BUSHINGS, GUIDES OR PILOTS NEEDED!

### THE READING BROACH KEYSEATER

The Reading Bench Machine requires no bushings, guides or pilots. No other machine like it. Very fast—capacity from  $\frac{1}{8}$  to  $\frac{1}{2}$  cutter.

Low first cost—prompt delivery.

READING MACHINE COMPANY, Reading (Cincinnati), Ohio



# ECONOMY



**ECONOMY Lubricant 1888  
fluid type - water soluble  
For Grinding and Cutting**

**Keener grinding  
Cleaner machines  
Longer wheel life**

**THE WHITE & BAGLEY COMPANY  
WORCESTER, MASS. • DETROIT, MICH.**

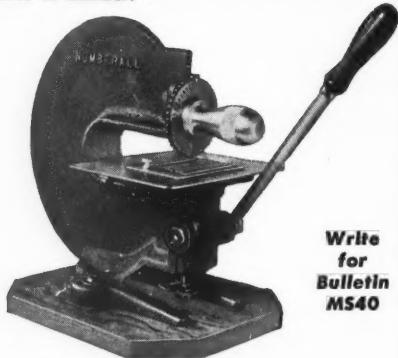
*Originators of Grinding Lubricants*

# NUMBERALL

CUTS THE COST OF STAMPING NUMBERS

## NAME PLATE DETAIL PRESS

Model 40 is for stamping details on name plates. Eliminates irregular and unsightly stamping on name plates, tags, etc. Available in  $\frac{1}{8}$ ",  $\frac{1}{4}$ ",  $\frac{3}{8}$ ",  $\frac{1}{2}$ " size characters. Dials contain all the letters and figures, diagonal line, and sign, dash, period. No experienced operator required. Steel, zinc, brass, fiber, etc., can be indented with a name or number.



Write  
for  
Bulletin  
**MS40**

## AUTOMATIC INDENTING NUMBERING HEAD • MODEL 50

Automatic indenting numbering head for consecutive or repeat numbering.  $1\frac{1}{32}$ " up to  $\frac{3}{8}$ " high figures can be furnished in sharp face Gothic or shaded Roman figures. Prefix or suffix letter wheels. Bench, foot, or power presses can be used. Numbers: radio, airplane, tool parts, name plates, and other objects in brass, steel, fiber, plastics.

Heads are of sturdy construction and give uninterrupted marking service.  
**Model 50**



**NUMBERALL STAMP & TOOL CO.**  
HUGUENOT PARK STATEN ISLAND 12, N. Y.

Nor does the saving end there, according to Rockwell. Comparative down-time for setups was cut to one-quarter of the former requirements. And the costs of several secondary operations, which, of course, involved more rehandling and storage floor space, have been eliminated.

As an example, he pointed out that one of the new units has taken over, as part of its operating sequence, the work formerly done on two double-spindle drill presses, one double-end key lathe and one precision threading and tapping machine.

Elaborating on how this subsidiary saving was accomplished, Rockwell explained that "on one of the new machines we rough and finish the bore on the taper of a  $\frac{3}{4}$ -inch body valve and bore and tap for bottom cover at the rate of 100 pieces per hour with one operator.

Formerly, it was necessary to snag ream and rough ream these pieces on a two-spindle vertical drill press with one operator, who finished 140 pieces an hour.

"The piece was then moved to a second machine, where it was bored and tapped for bottom cover by a second operator, at the rate of 150 pieces per hour. Again the work had to be moved to a third machine for finish reaming by a third operator at the rate of 128 pieces per hour.

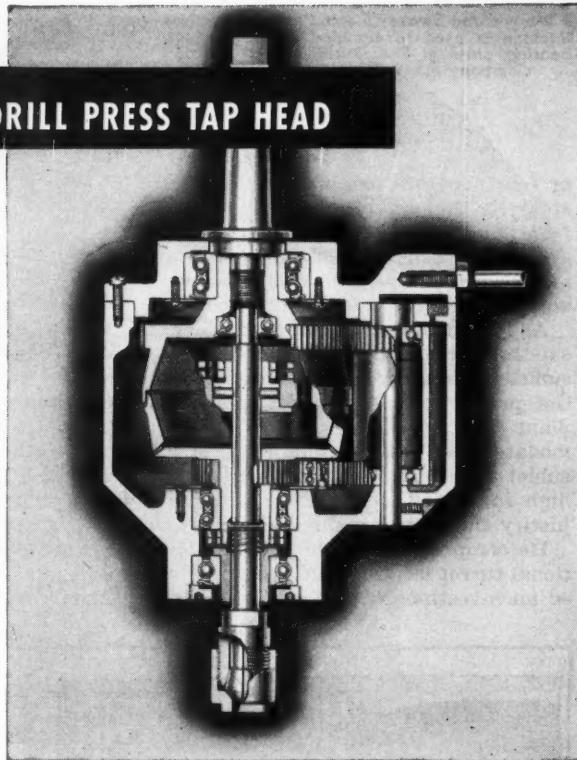
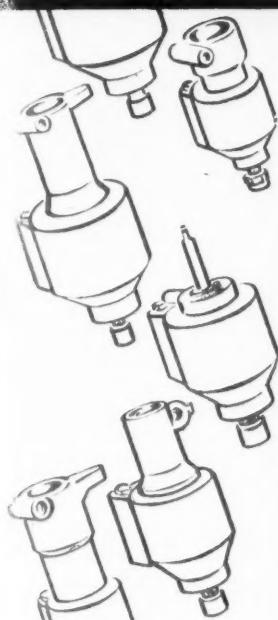
"In contrast, this finish reaming now is done on the five-spindle automatic with a single point tool. The use of this tool alone has eliminated thousands of dollars formerly required for the replacement of reamers, as well as the cost of sharpening them," Rockwell stated.

The Alloy Steel Products Company affords a case in distinct contrast. The kind of production there belongs, traditionally, to the turret lathe.

All told, there were 69 jobs, of 500 down to 200 pieces, in regular production. A run of 500 might include three



## SNOW DRILL PRESS TAP HEAD



### FEATURES:

- Drive shaft hardened and ground.
- Spindle in balance.
- Light weight clutch.
- Spindle bushing revolves with bearing.
- No lateral float.
- Collets ground throughout.
- Eight ball bearings.
- 2:1 reverse speed.
- Hardened alloy gears and studs.
- Delivery from stock.

The SNOW Drill Press Tap Head is the same unit as used on the SNOW Full Universal Tapping Machines. It is the only Tap Head designed and manufactured for a machine tool by a machine tool builder.

Engineers and mechanics will recognize the rigid, sturdy construction; and operators will vouch for length of service, ease of operation, and quality of work produced.

Eighteen years of production testing, and thousands of installations have proven the advantages of using a precision built drill press tap head.

These units are available in three sizes—  
0 through  $\frac{1}{4}$ "; No. 6 through  $\frac{3}{8}$ "; and No. 10  
through  $\frac{1}{2}$ "—both Morse taper and quill  
clamp styles are in stock.



**SNOW MANUFACTURING COMPANY**

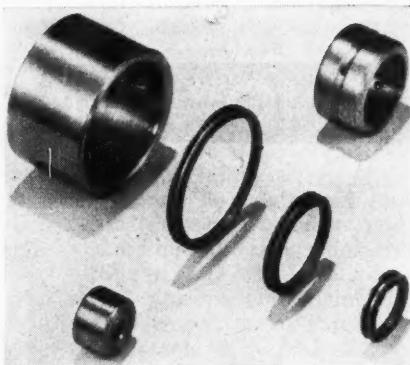
443 EASTERN AVE., BELLWOOD, ILL. • SUBURB OF CHICAGO

A Warner and Swasey 5-spindle Automatic Bar Machine is used to machine these precision bearing parts at The Orange Roller Bearing Company plant, Orange, New Jersey.

or four separate loadings of different stock for the production of valve parts from stainless steel, nickel, monel, aluminum, bronze and the like. One or two setups daily on each machine was the general rule.

As President J. H. Davis pointed out, existing turret lathe equipment hadn't sufficient capacity to accommodate all the production needed, nor had the plant sufficient floor space to accommodate much added equipment. Yet to sublet the jobs meant running up a high inventory overhead, in order to justify the cost of duplicate tooling.

He computed that adding five additional turret lathes would have required an investment about equal to that



of adding one five-spindle automatic with special tooling. A second automatic could be added for about half the cost of the first, because the special tooling would be interchangeable.

But a saving of close to \$10,000 was represented in acquisition of the automatic, as compared with five turret lathes, mainly because of the cost of

**HOGGSON BRAND**  
Since 1849

**HAND-CUT  
STEEL STAMPS  
Letters & Figures**

Deep, hand-cut letters in special-formula steel—result of 90 years of die making—assure clean impressions and long service. Face of stamp is angled for extra strength. Ideal for parts and tool marking and numbering. Also made in reverse for marking molds and dies. At mill supply houses.

Chamfered corners  
for locating  
the base.

**HOGGSON & PETTIS MFG. CO., New Haven, Conn.**

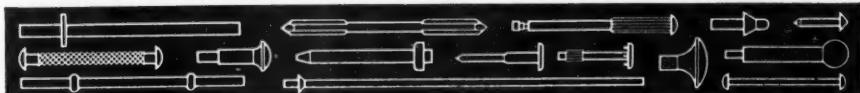


**special nails • rivets • screws • made to your order**



**HASSALL** cold-heading may solve your immediate special part problem . . . Special nails, rivets and threaded parts made in diameters from  $1/32"$  to  $3/8"$ —lengths up to 7" . . . Rivets  $3/32"$  diameter and smaller a specialty . . . Variety of metals, finishes and secondary operations . . . Economy, quality and quick delivery in large or small quantities . . . Tell us what you need . . . We will answer promptly. **ASK FOR FREE CATALOG.** 3-color Decimal Equivalents Wall Chart free on request.

**JOHN HASSALL, INC. • 394 OAKLAND STREET, BROOKLYN 22, N. Y.**



plant expansion to accommodate the latter. Following along this same line, Davis stated it would be possible to expand his plant by 50 per cent of its capacity, without adding new floor space, by simply replacing turret lathes with the new automatics.

He was reluctant to acquire automatic equipment on the assumption that a tooling department for production of special cams for each job would be necessary. Cost of the latter, plus excessive down-time during changeovers, would necessitate the long runs he was trying to avoid.

That problem became non-existent with the new five-spindle automatic, on which cams have been replaced by easily adjusted quadrants that are quickly set by the operator.

By laying out production at the Alloy Steel Products Company in a sequence of consecutive jobs insofar as possible, Works Manager A. P. Nel-

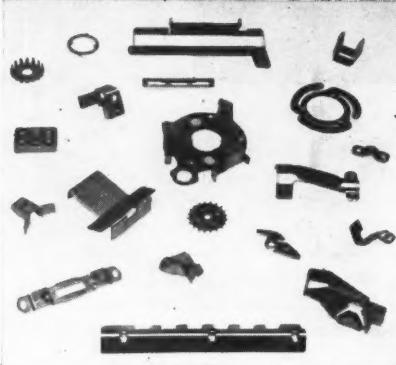
son finds the average setup time on the new automatic is about 3½ hours.

Furthermore, no setup man is needed. A single operator keeps the machine busy and turns out as much production as could have been obtained from five turret lathes, at the same time doing his own inspection. Meanwhile, the better speed selection on the multi-spindle makes for better quality and finish of the work.

A large amount of internal and external threading is required. Taps are operated at a maximum of 15 surface feet per minute and tap life is found to be about 550 to 575 holes on taper pipe threads requiring 95 per cent of full-thread depth.

For the most part, turning is done at from 85 to 205 surface feet per minute. Such high alloy stock, Nelson points out, does not lap or grind well, because the abrasive wheel tends to load up. For that reason the turned

# DIE CUT PARTS



FINE WORKMANSHIP  
PROMPT QUOTATIONS  
DEPENDABLE DELIVERY



• FOR EXPERIMENTAL  
Using Quick-Process Temporary Dies

• FOR PRODUCTION  
Using Semi-Permanent Process

OUR SPECIALTY: Stamping, Forming, Piercing,  
Extruding, Stenciling or Tapping small irregular  
shaped Parts (80-Ton Blanking Cap).

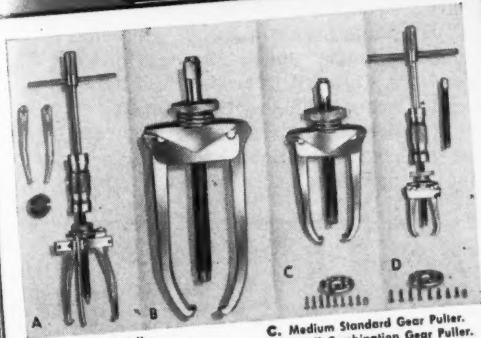
**BIG VALUE @ SMALL COST!**

**WLS STAMPING COMPANY**

Short Run Stampings

3296 E. 80th ST. • CLEVELAND 4, OHIO

# Snap-on Tools for Industrial Maintenance



## GENERAL INDUSTRIAL Snap-on GEAR PULLER SET

— gives you increased speed and accuracy in the maintenance of stationary and diesel engines and shop equipment.

Here is the finest selection of "matched unit" pulling tools your money can buy! It is the practical answer to all pulling problems within a 14" maximum jaw spread.

The slide shaft of (A) and the pressure screw of (C) are the same thread size and can be interchanged on these two pullers making each a combination type tool without expensive duplication of parts. Maintenance departments will find this set a profitable investment. Write for the Snap-on Catalog.

**SNAP-ON TOOLS CORPORATION**  
8032-J 28th AVENUE • KENOSHA, WISCONSIN

International Division, Kenosha, Wisconsin, U. S. A.

October, 1948



finish accomplished by the five-spindle automatic has to equal a ground finish.

As Davis summed up the advantages, the multi-spindle pays for itself in two years on a one shift basis, as employed on the work at Alloy Steel Products Company. The total of all cost factors entering into production there, including the cost of high alloy stock, has been cut in half as compared with other alternatives.

It was the flexibility of the five-spindle automatic, as a unit to handle the job runs a little too short for conventional automatic economy, that made it the solution to the problem of reducing inventory at the Orange Roller Bearing Company.

Other automatic equipment in use there includes three six-spindle machines and eight four-spindle units, all of conventional type. Under present circumstances, a month's run on any of the equipment would be unusual.

Ordinarily a change would be encountered every three or four days, with average runs amounting to three or four thousand pieces.

A high cost factor in production was represented in down-time. Often, four or five units of equipment would be undergoing setup simultaneously. Additional cost resulted from inefficient operation of cam controlled equipment, because a change of cams on such units as the six-spindles was not made in preparation for shorter runs.

When the new five-spindle automatic was added, efficiency went up and costs went down, because the change-over from one job to the next could be made much faster. A provision for automatic speed change on the new equipment overcame the lack of operating efficiency that resulted from failure to change cams. And, finally, the cost of a special setup man no longer has to be prorated over each run.

## For H' H Torque



PULLMORE discs provide high capacity, and efficient lever design enables light engaging pressure. Discs are accurately made from special clutch-disc materials and are tested for flatness. Made in single and double types, for operation in oil or dry. PULLMORE clutches have capacities from 1 to 90 H.P. at 500 R.P.M. They handle loads of much greater capacity when operated at higher speeds.

### Send for This Handy Bulletin

Shows typical installations of ROCKFORD CLUTCHES and POWER TAKE-OFFS. Contains diagrams of unique applications. Furnishes capacity tables, dimensions and complete specifications.

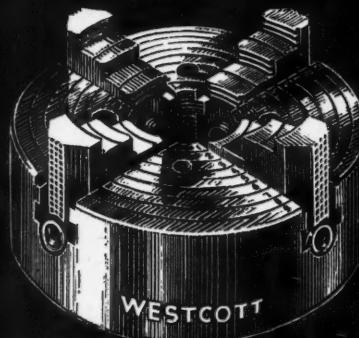
**ION BORG-WARNER**

U. S. A. ▲

cities



# WESTCOTT



*Famously Dependable*

WESTCOTT CHUCK COMPANY  
700 EAST WALNUT STREET  
ONEIDA • NEW YORK

PRECISION   DEPENDABILITY   SERVICE



# Aluminum Pistons Machined at Rate of 127 per Hour

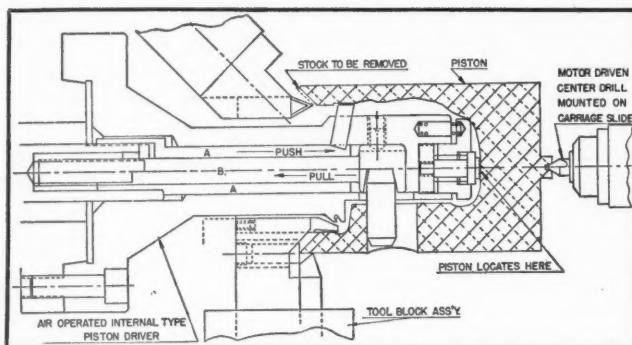


Fig. 1—Detail drawing of air operated expanding arbor

THE accompanying tool layout Fig. 1 shows the details of an air operated expanding arbor which is designed for use in conjunction with a Seneca Falls Model "LR" Automatic Lo-Swing Lathe in the machining of alloy pistons.

The centering operation is of particular importance as the piston has to be centered true with the rough bore of the piston in order to maintain accurate wall thickness. The design of the air operated Centering Arbor is shown on the layout and it will be noted that the end of the arbor is fitted with a spring loaded centering plate which centers the piston true with the radius in the bottom of the bore.

The open or skirt end is centered with three expanding jaws which are oper-

ated with expander push rod A. The piston is held back against the centering plate by a pin inserted through the gudgeon pin hole, and operated by pull rod B which passes through the push rod A. The push-pull action on the pull rods is obtained with a single air cylinder which "floats" on the headstock spindle, the "push" action being obtained with the air cylinder body, while the "pull" action is transmitted by the air cylinder piston.

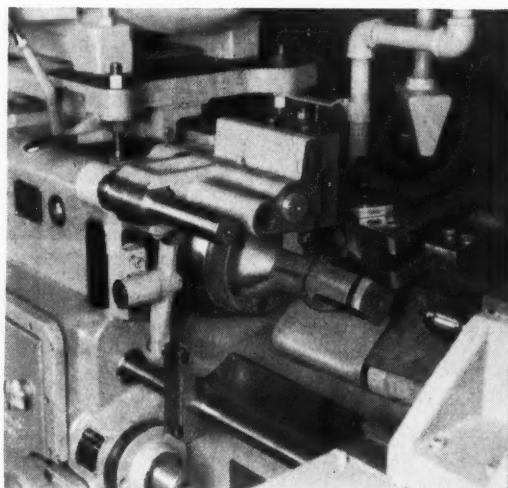


Fig. 2—Front view of air operated loading fixture



Teamed for Speed  
and Efficiency

# Sioux

## ELECTRIC DRILLS

PLUS

*High Speed Edge  
HOLE SAWS*



1 $\frac{1}{2}$ " DRILL cuts to and including 1 $\frac{1}{2}$ " holes. The Saw's High Speed Steel Teeth with chrome-vanadium blade have great strength cutting ability and long life.



1 $\frac{1}{2}$ " DRILL cuts to and including 3 $\frac{1}{2}$ " holes. SIOUX HOLE SAWS come in various sizes from  $\frac{3}{8}$ " to and including 4 $\frac{1}{2}$ " diameter.

Sold only by Authorized SIOUX Distributors

STANDARD THE

ALPERTSON & CO., INC.



WORLD OVER

SIOUX CITY, IOWA, U.S.A.

# Buy KIPP AIR GRINDERS Because

The RPM's stay up while grinding...not only when the grinder runs idle.

It is an established fact that surface speeds must stay up to approximately a mile a minute if you want to grind—not just rub. The speed of Kipp air grinders drops but slightly when put to work. That means better work—longer wheel life.

Buy Kipp air tools for best results, lower prices.

MODEL JA  
50,000 R. P. M.

\$42.00

IN U. S. A.



Weight 12 ounces;  
length 6 1/4 inches;  
chuck size 1/8 inch.  
Wheel guard re-  
moved for better  
illustration.

**MADISON-KIPP CORP.**  
208 Waukesha St., Madison, Wis., U.S.A.

• Skilled in DIE CASTING Mechanics  
• Experienced in LUBRICATION Engineering  
• Originators of Really  
High Speed AIR TOOLS

The machining operations are as follows: The piston is centered on the closed end with a combination center drill mounted in an electrically operated centering head fixed to the front carriage, which in turn is operated by the longitudinal feed cam. The open end of the skirt is bored and faced and the outside diameter is turned a short distance with three tools mounted in a

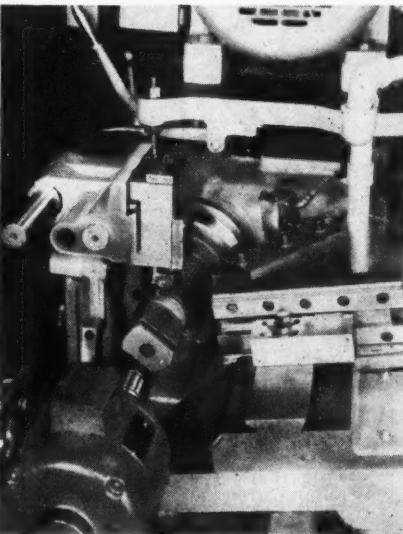


Fig. 3—Overhead view of air operated loading fixture

special overhead attachment clearly shown in the accompanying illustration Figs. 2 and 3. The large 45-deg. chamfer on the bore of the piston is machined with a special squaring attachment mounted on the back ways of the lathe. This chamfer is important, has to be free from chatter marks and, consequently, could not be made with a formed tool.

All of the above operations proceed simultaneously and a production of 127 pistons per hour is obtained per machine with tungsten carbide tools.

*Designed*  
**ESPECIALLY FOR TODAY'S NEEDS...**

## USE EX-CELL-O TOOL GRINDERS FOR ECONOMICAL TOOL RECONDITIONING

Ex-Cell-O tool grinders cover a wide range of work—from the needs of small shops that require economical equipment to condition cutting tools only occasionally, to the needs of those larger plants that regularly grind tools in large quantities. Ex-Cell-O grinders enable manufacturers to reach the highest efficiency to reach the grinding, cut down grinding time, improve finish, speed up production, and prolong tool life. Another feature of each Ex-Cell-O grinder is an ease of operation that enables a relatively inexperienced operator to perform accurate grinding in a minimum of time. Send today for Catalog 46262 showing complete line of Ex-Cell-O's standard tool grinders.

## EX-CELL-O TOOL GRINDERS



...for efficient and economical sharpening of single-point tools... carbide, stellite-type, and high speed steel



48—42

**XLO**

EX-CELL-O for PRECISION

**EX-CELL-O**  
CORPORATION  
DETROIT 32, MICHIGAN

# Seventy-Five Per Cent More Production on Automatic Lathe

FIGURE 1 shows a view of two Lodge & Shipley 2A Duomatic (automatic) Lathes, which are now being used by The J. I. Case Company, noted farm equipment manufacturers, at their Bettendorf, Iowa, plant. In producing 1½-inch diameter snapping roll shafts for Case's famous corn picker, two Duomatics are used. Operated by one man, these automatic lathes turn and face cold rolled bar stock to 0.002 tolerance at a production rate 75 per cent greater than former lathes. Carboloy and high speed steel tool bits are used for this type work.

As its name implies, the 2A Duomatic is really two lathes in one. Two tool carriages operate singly or simultaneously. With two multiple tool set-

ups working, production may increase double or more. There are no expensive time-consuming cams to change on the Duomatic. Jobs are set up and run in minimum time.

This modern machining marvel takes over from the moment the operator loads the workpiece. Complex parts are actually duplicated without further attention from the operator, no matter how complex the job, performing any combination of straight, or angular "in and out" turning and facing operations. The 2A is so completely automatic even unskilled workers handle complex multiple tool jobs with ease. This machine is also available in a larger model, the 3A Duomatic, for heavier work.

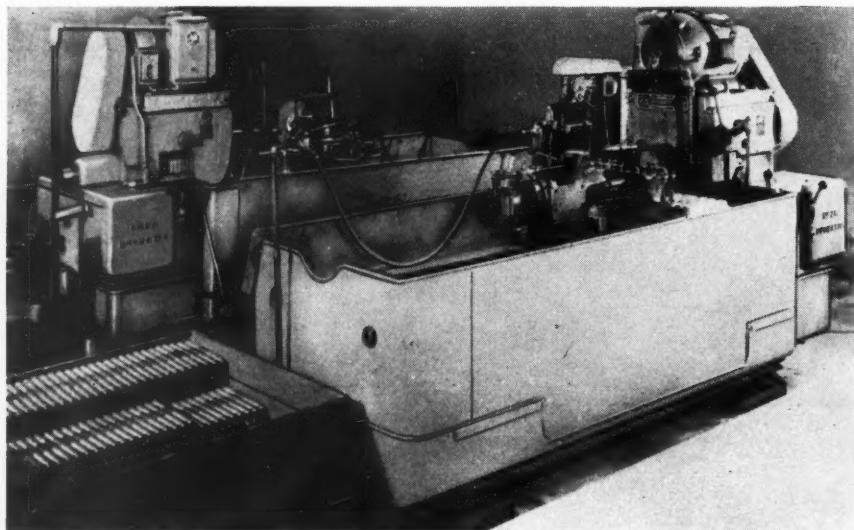


Fig. 1—View of two Lodge & Shipley 2A Duomatic Lathes installed in farm equipment manufacturing plant

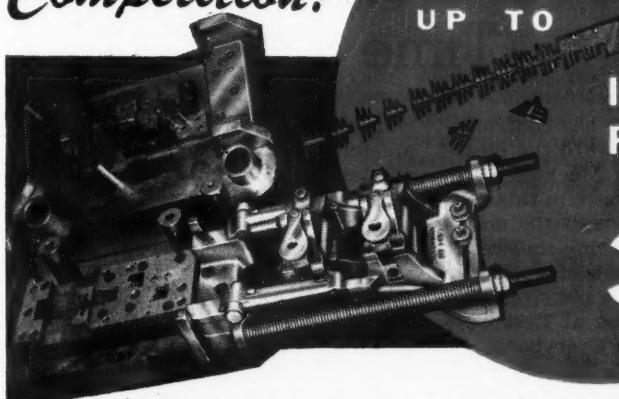
*Don't Bow to  
Competition!*

REDUCE  
OPERATOR  
HOURS  
UP TO

90%

INCREASE  
PRODUCTION  
As Much As

300%



## DICKERMAN AUTOMATIC DIE FEEDS ARE DOING IT DAILY!

Stop wasting time by hand feeding or using worn or obsolete punch press feeds. The modern Dickerman Die feeds may be attached to any press in any required position. They will accurately feed any Metal, Paper, Fibre,

Rubber or Plastic. Through the increased PROFITS they assure you, they pay for themselves in short order. Their moderate cost will amaze you. Rugged construction . . . no wearing parts. Many styles and sizes.

**Write for  
CATALOG NOW!** **H. E. DICKERMAN MFG. CO.**

322-1012 ALBANY ST., SPRINGFIELD, MASS.

### DICKERMAN DISTRIBUTORS

**W. C. Chapman & Son**  
Baltimore, Md.  
Saratoga 5703

**G. W. Brunton & Son**  
Buffalo, N. Y. (Kenmore)  
Riverside 2325

**Fidelity Tool & Supply**  
Camden, N. J. Camden 4-7765  
Phila., Pa. Lombard 3-1256

**Federal Machinery Sales Co.**  
Chicago, Ill.  
Central 6680

**The Die Supply Co.**  
Cleveland, Ohio  
UT 1-0550

**Diemaker Supplies, Inc.**  
Detroit, Mich.  
Trinity 1-2865

**The Standard Die Supply, Inc.**  
Indianapolis, Ind.  
Riley 5824

**Jamison Steel Corp.**  
Los Angeles, Calif.  
Trinity 9826

**The Satterlee Co.**  
Minneapolis, Minn.  
Atlantic 5264

**Export Department**  
401 Broadway, New York, N.Y.  
Cable address UNIONTEX

**T. E. Ryder Machinery Co.**  
15 Moliere St., W. Montreal, Canada

**Acme-Danneman Co., Inc.**  
New York, N. Y.  
Canal 6-1739  
**Colcord-Wright Machinery &**  
**Supply Company**  
St. Louis, Mo. Central 6970

**Lindco, Inc.**  
Worcester 3, Mass.  
6-4637

**Jamison Steel Corp.**  
San Francisco, Calif.  
Exbrook 2-2230

**J. F. Owens Machinery Co.**  
Syracuse, N.Y.  
Syracuse 5-2632 — 5-2639

# Crankshafts Machined in One-Fourth of Previous Time

THE outboard motor has contributed a great deal toward the pleasure of fishing. Gisholt Machine Company has carried its share in this contribution by solving one of the major production problems facing this growing industry. The following story is but a small part of the old American story—More Production at Less Cost means More Things for Everybody.

The crankshaft of an outboard motor is part of an exceptionally compact and efficient unit. Restricted in length by the designers, the production men are faced with the problem of machining the adjacent cheeks for each bearing.

Ordinarily in the preparation of a crankshaft for grinding, a variety of machines and operations are required. The cheeks of the throws must first be roughed out in order to provide

working-room for turning the pin diameters. In many cases these pin diameters must be both rough and finish turned. Finally, the cheeks must be adequately faced in order to provide proper clearance for the operating assembly. Multiply this sequence of operations by the number of individual pin bearings and you can begin to realize the complexity of the machining problem.

The Gisholt Turn Mill shown in Fig. 1 has been designed to combine all of these operations into one. The crankshaft forging comes to the machine with both ends already turned, as is necessary under the former method. However, it now leaves the machine ready for grinding. Figure 2 shows a view of both the single and two-throw type crankshafts as they appear before and after turn milling. Note the solid counterweight on the single throw crank. Nearly one-fourth of the total weight must be removed in a single operation.

As a crankshaft comes to the turn mill it is inserted between driving

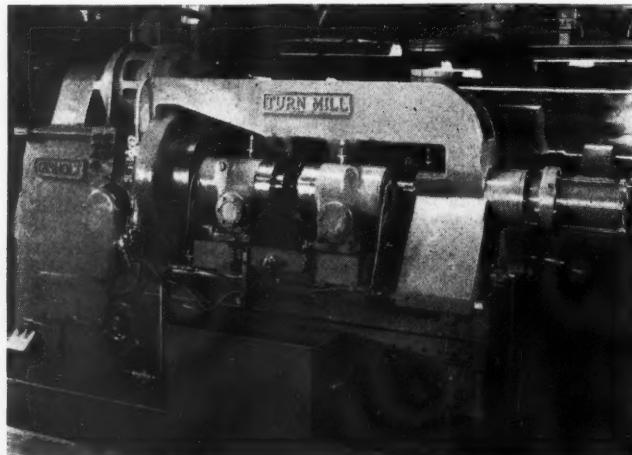


Fig. 1—Model TMS-1 Crankshaft Turn Mill



*job tested!*

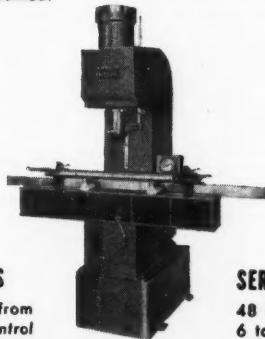
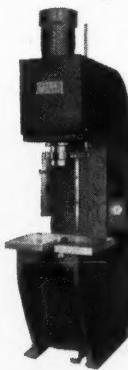
One of the big advantages of using standard Hannifin Hydraulic Presses is that you get modern "JOB TESTED" designs of highest quality. Hannifin gives you everything you want for fast, accurate production: ram speed and stroke to meet work requirements...tables and fixtures arranged for top efficiency...controls to suit your needs. For detailed engineering recommendations, see your local Hannifin representative or write.

**HANNIFIN**

## **HYDRAULIC PRESSES**

### **SERIES S STRAIGHTENING PRESSES**

17 standard models. Capacities from 6 to 150 tons. Sensitive Pressure Control standard equipment. Choice of center type or roller vee fixtures; spring mounted.



### **SERIES F FORCING PRESSES**

10 standard models. Capacities from 6 to 150 tons. Sensitive Pressure Control standard equipment. Built-in power unit. Stroke adjustable. All-steel welded frame; normalized.

### **SERIES C COLUMN TYPE PRESSES**

48 standard models. Capacities from 6 to 150 tons. Any bed size. 2 or 4 columns. Manual, automatic or semi-automatic control. Furnished with or without platen.

**HANNIFIN**

*Nationwide  
Sales and  
Service*

## **HANNIFIN CORPORATION**

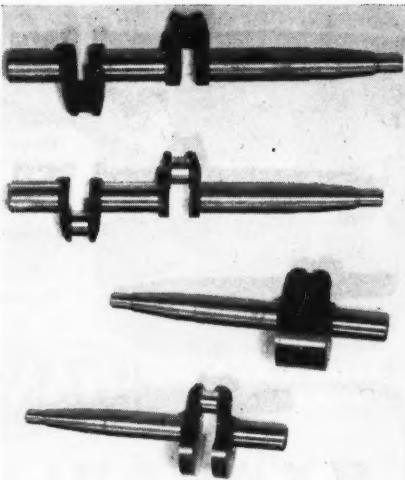
1101 So. Kilbourn Ave., Chicago 24, Ill.  
AIR CYLINDERS • HYDRAULIC CYLINDERS • HYDRAULIC PRESSES  
PNEUMATIC PRESSES • HYDRAULIC RIVETERS • AIR CONTROL VALVES

Fig. 2—Views of both the single and two-throw crankshafts, showing before and after Turn Milling.

heads. These heads are positioned on a slide. When the operator pushes the "start" button the slide feeds into the milling cutter to the pin diameter grinding tolerance. The crankshaft is then rotated a full revolution around the axis of the pin, after which the cutter stops, the slide retracts and the piece is unloaded.

Figure 3 shows the single throw crankshaft in operating position. The left driving head is open to show the method of holding. The floor-to-floor machining time is 55 seconds.

Figure 4 shows the two throw crankshafts in operating position. The first



throw is handled on this machine in the same manner as the single throw crankshaft. When the first throw bear-

The advertisement features a central black oval containing the text "DRILL JIG" in large, bold, sans-serif letters, followed by "Bushings—Gages" and "ECONOMICAL—ACCURATE". To the left of the oval, there is a large, cylindrical metal component labeled "DRILL JIG" with several short lines radiating from it. Below the oval, several smaller cylindrical components are shown, some with internal threads or grooves. At the bottom, the company name "Economy TOOL & MACHINE CO." is written in a stylized script font, followed by the address "1827 S. 68th St., Milwaukee 14, WIS."

DRILL JIG  
Bushings—Gages  
ECONOMICAL—ACCURATE

IN STOCK, ready for immediate delivery, all A. S. A. STANDARD types and sizes. Exceptionally fast delivery of NEW GAGES and Gages salvaged by HARD CHROMIUM PLATING.

Bulletin and Price Lists sent promptly upon request.

Economy TOOL & MACHINE CO.  
1827 S. 68th St., Milwaukee 14, WIS.

## the source

Crude abrasive is produced by our Canadian plant . . . refined, tested, processed in our Philadelphia factory . . . then used in manufacture of grinding wheels second to none in quality, performance and cost-cutting efficiency.

## the products

Complete line includes Grinding Wheels, Mounted Wheels and Points, Segments, Abrasive Grain, Bricks and Sticks . . . known, proven products backed by Simonds Abrasive Company's reputation as a major manufacturer of grinding wheels and abrasives for over 50 years.

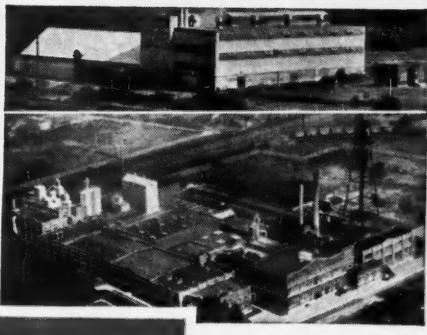
Available Everywhere



## where to get them

From your Simonds Abrasive Company distributor member of our distributor network serving key industrial centers here and abroad. He stocks Simonds Abrasive grinding wheels for every job and can advise you on wheel selection. Let us send you the name of the distributor in your area. Write now.

Whether you use portable, swing frame or floor stand grinders, Simonds Abrasive Company Grinding Wheels provide long lasting action, definite economy, over-all dependability on every job. It costs you nothing to consult a Simonds Abrasive Company engineer on your grinding problems. He can probably show you where you can save money through use of Simonds Abrasive Company Grinding Wheels adapted to particular conditions of your jobs.



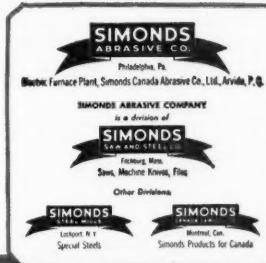
Boron      Electron  
ALUMINUM OXIDE      SILICON CARBIDE

**SIMONDS**  
ABRASIVE CO.

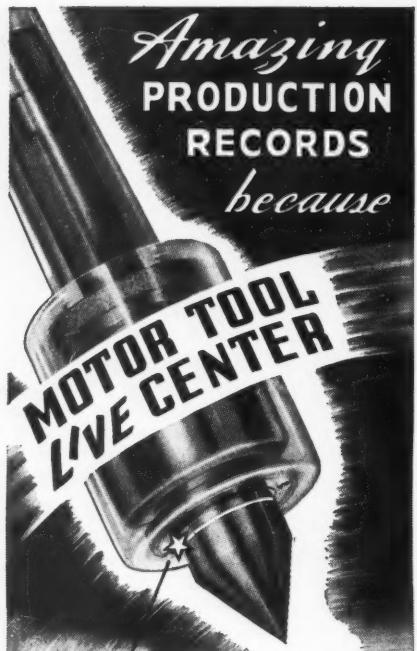
PHILADELPHIA, PA.

## Grinding Wheels

Complete line includes  
every shape and size.  
Abrasive Grains  
Mounted Wheels and Points  
Surfacing Segments  
Bricks and Sticks



**SIMONDS ABRASIVE COMPANY, PHILADELPHIA 37, PA. • DISTRIBUTORS IN ALL PRINCIPAL CITIES**



**is the ONLY Center  
with the  
OVERLOAD  
INDICATOR**

**Look for the RED BAND**

You no longer have to guess whether you are overloading your live center thrust bearings if you use MOTOR TOOL LIVE CENTERS. When the load is too great the RED BAND around the spindle disappears into the housing. You can see at a glance when overloading occurs. This is an exclusive feature, developed by Motor Tool which cuts repair costs to practically nothing if due diligence is exercised. As long as the RED BAND is visible you are running COOL and SAFE.

**Send for**

**N E W descriptive folder . . . and verified case histories of how MOTOR TOOL LIVE CENTERS have out-performed and outlasted ALL other centers on exceedingly tough, continuous-run jobs.**

**MOTOR TOOL MFG.CO.**  
8663 DAYTON ST. DETROIT 10, MICH. PHONE GR 6352  
*Make it a Rule  
to Call Motor Tool*

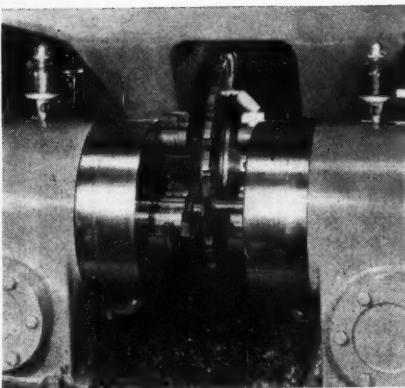
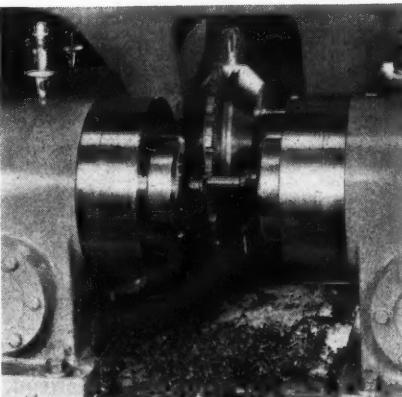


Fig. 3—Closeup of cutter and single throw crankshaft

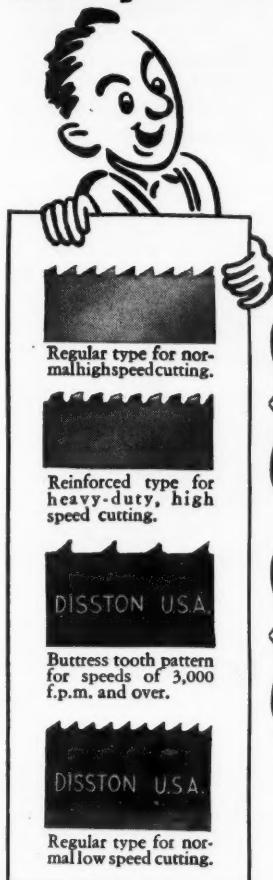
ing is completed the crankshaft is removed, turned end for end and replaced in the machine. The operation is then repeated for the second throw bearing. The total floor-to-floor machining time for both throw bearings is 1½ minutes.

It is the opinion of the outboard motor manufacturer that the Gisholt Turn Mill does its work in one-fourth or less of the previously required time.

Fig. 4—Closeup of cutter and two-throw crankshaft



**One of the 4 is EXACTLY RIGHT  
for your metal cutting ...**



## **DISSTON BAND SAWS**

No matter what metals you cut nor at what speeds you operate, Disston has the right band saw blade to speed up your work, reduce down time and cut costs.

### **HARDENED THROUGHOUT**

For high speed cutting of non-ferrous metals, plastics and many other materials. Two types (Regular and reinforced). Also recommended for friction cutting of ferrous metals at speeds of not less than 12,000 f.p.m. All sizes.

### **HARD EDGE, FLEXIBLE BACK**

Hardened on tooth edge only for greater flexibility and longer life. Two types (Regular type for general metal cutting; Buttress tooth specially recommended for magnesium and aluminum alloys). All sizes. 100 ft. coils,  $\frac{1}{8}$ " to  $\frac{1}{2}$ ", packed in the handy Disston Safety Reel.

### **ANOTHER COST-CUTTING TIP**

Use these Disston Metal-Cutting Tools:  
FILES . . . HACK SAW BLADES . . . CIRCULAR SAWS . . . CARBOLOY FITTED CIRCULAR SAWS . . . TOOL BITS.



Order from your Disston Distributor,  
or write direct for further particulars



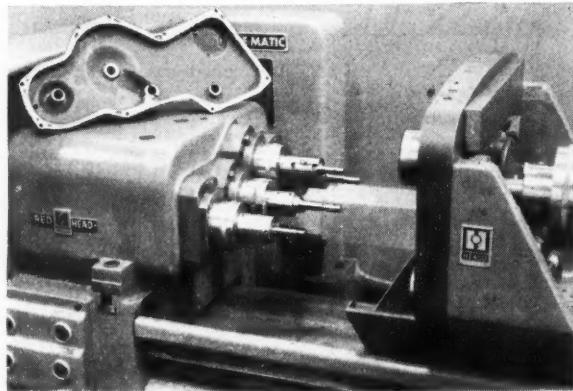
**HENRY DISSTON & SONS, INC., 921 Tacony, Philadelphia 35, Pa., U.S.A.  
In Canada, write: 220 Fraser Ave., Toronto 1, Ont.**

# Gear Case Production Increased 170 Per Cent

A LEADING manufacturer of washing machines now bores, faces and chamfers gear cases in a single setting with outstanding results. The new Heald Model 222 Bore-Matic which accomplishes this job has boosted production 170 per cent and lowered costs 63 per cent. This double end machine has a cluster head arrangement of four spindles on the left-hand end, as shown in Fig. 1, while a single head on the right end completes the boring head equipment. The fixture is an angle plate type with round and two-way pin location clamped by six hydraulically operated pull-back fingers.

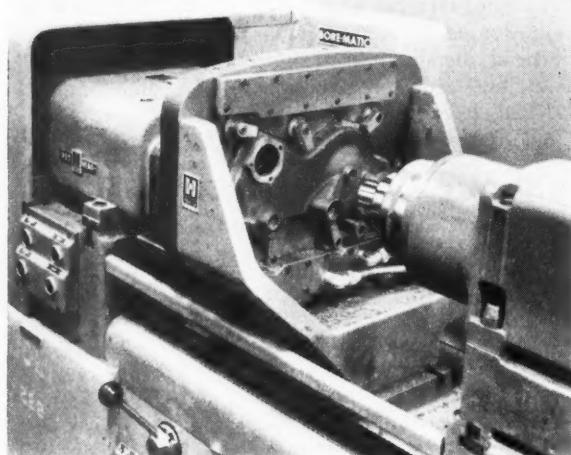
Once the fixture has been loaded as shown in Fig. 2 and the starting

button pressed the operating cycle is completely automatic. The table rapid traverses to the left where four holes are bored and chamfered and adjacent faces finished; the table then rapid traverses to the right-hand end for the single spindle operation; table rapid traverses to center stop for reloading.



(Above)

Fig. 1—View of cluster head for boring, chamfering and facing five holes simultaneously in workpiece shown.



(Left)

Fig. 2—Workpiece clamped in position on fixture. Five holes are bored, chamfered and faced simultaneously.

# 3 HANDEES COVER the FIELD

TOOLS OF 1001 USES GRIND, DRILL, POLISH,  
ENGRAVE, CUT, CLEAN, SAW, CARVE, SAND  
For Work on Metals, Alloys, Wood, Plastics, Stone, Horn,  
Bone, etc. Plug in any AC or DC socket.

## HANDEE 44

A good production tool. Has everything—speed, power, versatility and pencil-point precision. Constantly cooled by forced air, the 44 runs cool and smooth all day long. Weighs 2 lbs. 8½" long. 20,000 r.p.m. \$31.50. In wood case with accessories \$42.50.

## HANDEE Hi-Power

A big fellow. Fast, powerful, sturdy, for continuous work. Has ample power to drive a 2½" diam. wheel. Weighs 3 lbs. 10" long. 17,000 r.p.m. In case with accessories \$42.50.

## HANDEE

First tool of this type—today's finest. For precision work. Also gets into hard-to-reach places to make machinery repairs. Weighs 12 oz. 6½" long. 25,000 r.p.m. With 7 accessories \$20.50. Handee with 40 accessories in case \$27.50.



## CHICAGO ACCESSORIES

Grinding and mounted wheels, sanders, steel cutters, etc.—the most complete line to fit any powerful tool — over 500 of finest quality — all made in our own plant.

**HANDEE TOOLS and ACCESSORIES are in stock in principal industrial areas.**

**Write for catalog.**

- 
- Send Handee 44    **CHICAGO WHEEL & MFG. CO., 1101 W. Monroe St., Dept. MM, Chicago 7, Ill.**  
 Hi-Power  
 Handee  
 Remittance enclosed  
 Send C.O.D.  
 Send Catalog
- Name.....
- Address.....
-

# Milling 500 Slots per Hour

THE Barber-Colman Interlocking Side Mills shown in the accompanying illustration Fig. 1 are now being used in the slotting of the cast iron yarn supports shown in Fig. 2 at the rate of 500 per hour under the following extraordinary conditions:

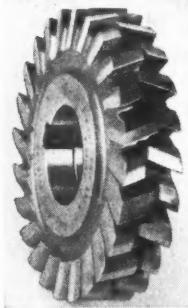


Fig. 1 — Barber-Colman Interlocking Side Mill Cutter

1. Magnetized chips cling to the cutter and machine surface, causing extra cutter abrasion.
2. Corners of slot must be sharp.
3. Width of slot must be held to very close tolerance.

The old method consisted of milling six pieces at a time on a conventional milling fixture with ordinary slotting cutters. Pressure had to be applied by clamps in 13 places to hold the six pieces firmly. It was difficult to set



Fig. 2—Cast iron yarn supports

the clamps satisfactorily because of the small size of the castings. In addition, tool cost was excessive because standard slotting cutters became undersize after only a few sharpenings. Production was 100 pieces per hour, and the cutters had to be sharpened after every 1,700 pieces.

As the parts were rough-ground on the bases, it was possible to substitute magnetic holding for mechanical clamping. By climb-cutting to exert a downward pressure on the parts, it was found that magnetic holding power was sufficient to firmly hold the pieces in place, with no vibration



Fig. 3—Setup for milling 23 cast iron yarn supports per load on magnetic chuck

SEE LUSOL... THE TIME SAVING FLUID  
AT BOOTH 1629  
METALS SHOW, PHILADELPHIA, OCT. 25-29.  
THE NEW WATER SOLUTION  
THAT HELPS CUT METAL BETTER, FASTER  
AND SAVES  
TOOLS

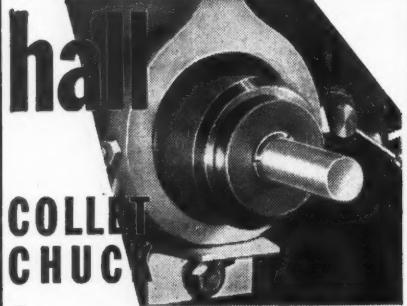


THE NEW DAY COOLANT  
THAT SPEAKS FOR ITSELF

The word is spreading...  
a trial will convince you

*write - wire - phone*

**F. E. ANDERSON OIL COMPANY**  
512 BROWNSTONE AVE. PORTLAND, CONNECTICUT



SPEED UP production in multiple operations with push-out type Hall Collet Chuck. Full spindle capacity or over. Tremendous grip over or under stock size to .007—without adjustments...no bearings, friction, heat or loss of power. Instant release without stopping lathe.

2-inch capacity, \$145; 3-inch capacity, \$295;  
1-inch capacity, \$95

Round, square or hex collets, plain—serrated

HALL MANUFACTURING COMPANY  
622 Tularosa Drive • Los Angeles 26, Calif.

during the cut. Twenty-three parts could be milled at a time, held against locating stops at one end of the magnet. Set-up and loading time were cut to only a fraction of the former time.

The Barber-Colman Interlocking Side Mills operate at 250 surface feet per minute and 14 inches feed per minute. Despite this high rate of metal removal and the abrasive action caused by clinging magnetic chips, these cutters are producing 3,300 pieces between sharpenings. The Interlocking Cutters are sharpened until the cutting teeth are completely expended because their width dimension can be increased after each sharpening by merely inserting a shim between the two halves. Another cutter feature which helped to solve this milling problem is the Herringbone Tooth Design. The angular gashes produce a shearing action in cutting, hence a better finish, with less chance for vibration at high feeds and speeds.

## HIGH SPEED PRODUCTION CONTINUOUS OIL GROOVING

WICACO CONTINUOUS OIL GROOVER cuts grooves of all descriptions, internal or external, continuous or intermittent.

Send us samples for grooving. We will return them cut to specifications, with a record of time and cost estimate. No obligation.

*Ask For Descriptive Booklet  
And See How You Can  
Improve Your Production.*

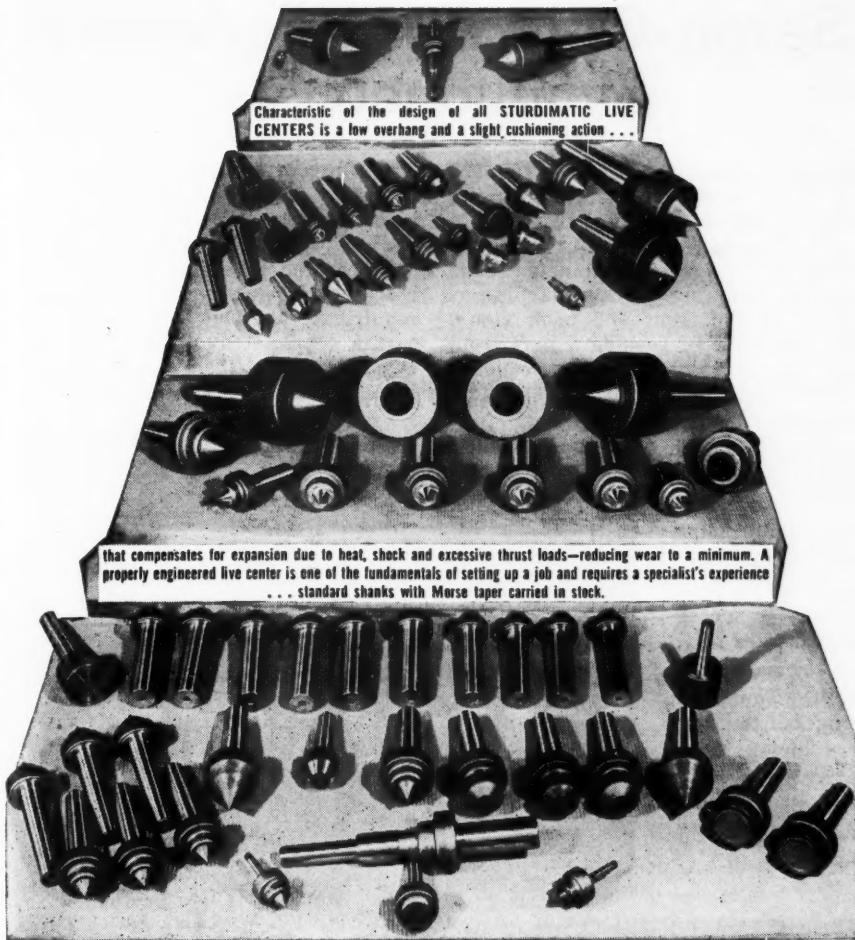
**WICACO**  
MACHINE CORPORATION

WAYNE JUNCTION, PHILA. 44, PA.

Manufacturers of  
Precision Machinery and Machine Parts

SINCE  
1868





**Send us your specifications and blueprints—We will see that your job is set up with the right LIVE CENTER.**

# STURDIMATIC

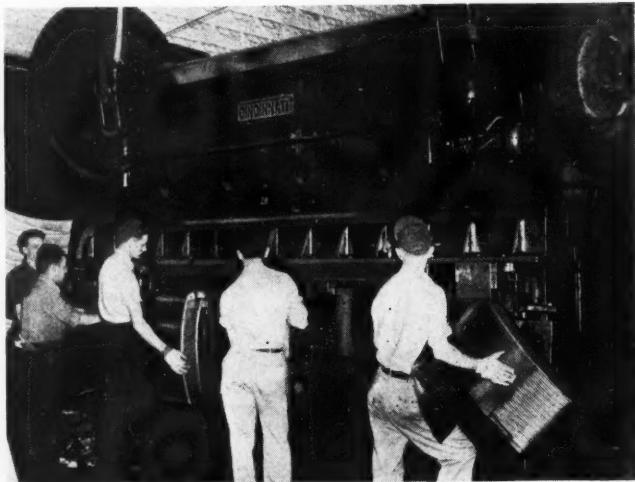
TOOL COMPANY

5222 THIRD AVE. DETROIT, MICH.

# Seven Operations Performed Simultaneously

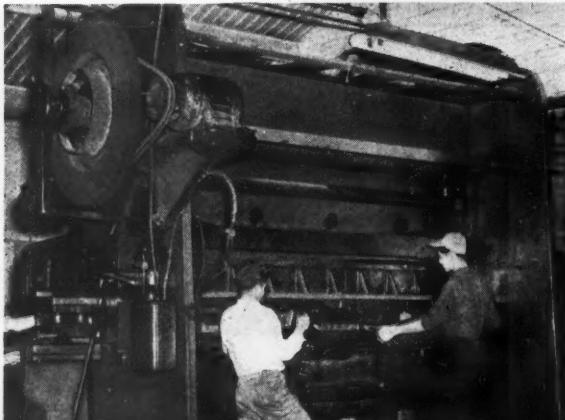
THE accompanying illustrations Fig. 1 and Fig. 2 show a Cincinnati Shaper Company Press Brake which is designed for use in the fabrication of refrigerator cabinets. Seven men are working on this machine as shown in the front and back views. This principle of passing a part from one man to another while a sequence of operations are performed is rapidly becoming popular in the press field. Sometimes called multiple operation, the principle employed is simply the application of a succession of dies fitted to the same machine. The extra length of the modern press brake allows several such dies to be arranged in this manner.

The advantages from multiple operations are many. A single machine replaces several other machines, resulting in a lowering of capital investment and required floor space. There is no stacking of parts between operations requiring valuable floor space. The part is completed by passing from hand to hand and can then be moved immediately to assembly or other operations



(Above)

Fig. 1 — Front View of Cincinnati Press Brake designed for use in the manufacture of refrigerator cabinets.



(Left)

Fig. 2 — Rear View of Cincinnati Press Brake designed for use in the manufacture of refrigerator cabinets.

such as painting or polishing. The parts are not marked or bent in moving from one machine to another, thus reducing the number of spoiled parts.

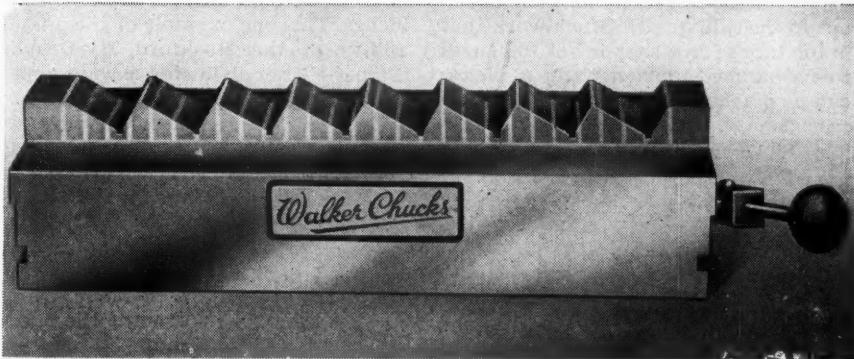
# *Walker Does It Again*

The flexibility of electro-magnetic applications has for one-half a century been utilized by *Walker* engineers to solve many interesting and intricate problems.

Electro-magnetic devices obtain their energy from a dynamic source of current flow. Permanent magnets receive their potentialities from static external energies.

This difference was a stumbling block and limited permanent magnetic chucks and their flexibility, but *Walker* engineers have overcome this handicap and now *Walker* Permanent Magnetic Chucks are adaptable to a large and useful field of peculiar problems.

Here is a 6" x 18" Permanent Magnetic Chuck, *Walker* patent, ready for one of these unique applications:



Protected by Walker Patents.

## O. S. WALKER CO. INC.

WORCESTER 6, MASSACHUSETTS

*Original Designers and Builders of Magnetic Chucks*

# Machining Copper Cores to Tolerances Measured in Micro-Inches

**T**HE Rockford Hy-Draulic Shaper-Planer is a distinctive type of machine tool which combines the speed of a shaper with the accuracy and convenience of a planer. Its openside construction adds to its productive capacity and ability to pay for itself quickly by handling most economically a wide variety of work, some of which would be otherwise costly to machine. The Rockford Hy-Draulic Shaper-Planer handles with ease many kinds of work that would tax the capacity of large shapers owing to the fact that when making long strokes the shaper ram has a tendency to deflect under the pressure of heavy cuts. This tendency increases greatly as wear develops in the ram guides. Much work that is too large for a shaper but too small to be handled efficiently on a planer can be machined speedily and econ-

ically on the shaper-planer.

The Rockford Hy-Draulic Shaper-Planer is one of the first machine tools in which the use of hydraulic pressure for driving the table is employed. The feeds, of course, as well as the table are driven by means of oil which is under heavy pressure.

Machining a copper core of a resistance welder in the plant of a large manufacturer of welding equipment, as shown in Fig. 1, is a most unusual job and demonstrates the smooth flow of Hy-Draulic power drive. The finish obtained on this work with the Rockford Hy-Draulic Shaper-Planer is a surface that checks precision flat within a tolerance measured in micro-inches. This one example of the adaptability of the Rockford Hy-Draulic Shaper-Planer indicates a wide application for this type of machine on jobs which require accurate machining in a minimum amount of time.

The Shaper-Planer is designed and engineered in a manner which assures the maximum in dependable, trouble-free operation.

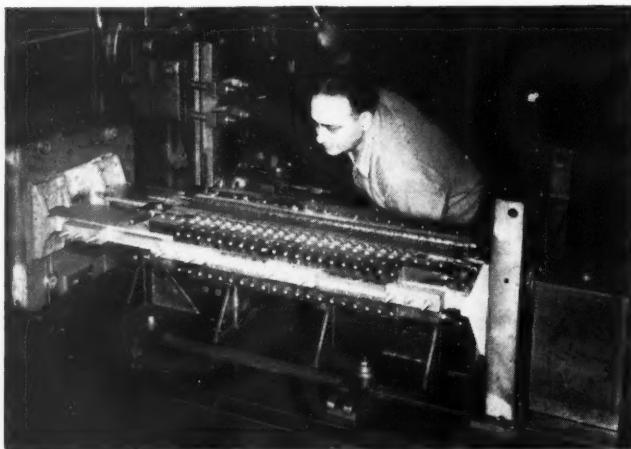


Fig. 1—View Showing Rockford Hy-Draulic Shaper-Planer Machining a Copper Core of a Resistance Welder

# And they doubled production—



## without adding men, materials or machines:

**HOW WOULD** you like to see: Your production of pieces per tool grind upped 300%? Rough grinding operations eliminated? Work speeds quadrupled? Finishes improved? More work squeezed from your machines? Wear problems licked? Work held to closer tolerances?

### Get these results with Carboloy

In the manufacture of dairy equipment, a simple change to Carboloy brought *every one* of these advantages.

Production more than doubled, and despite a 16% raise in labor rate and increases in material costs, cost per piece was *not* increased.

### How can you get these results?

The benefits of Carbide can

apply to your operations, too. Find out how: call in a Carboloy engineer.

His knowledge of carbides, with your engineers' knowledge of your production problems, can cure many of your production ills, even if you're already using carbides to some extent.

### Call in Your Carboloy engineer

He'll gladly assist you. And he can help you select the most economical tooling from any of Carboloy's 600 standard tools and blanks, or special Carbide-tipped tools made by more than 150 tool manufacturers.

So why not get in touch with him?—or write us direct:

**CARBOLOY COMPANY, INC.**

11143 E. 8 Mile Ave., Detroit 32, Mich.



Standards stocked  
by authorized dis-  
tributors in 82 cities  
coast to coast.

# CARBOLOY®

CEMENTED CARBIDE

# Microhoning 300 Connecting Rods per Hour

**T**HE machine shown in the accompanying illustration is a Micromatic Model 710-2 two-spindle Hydrohoner equipped with Microsize, automatic sizing, designed for Microhoning Kaiser-Frazer connecting rods.

With the machine set for automatic operation, from 200 to 300 rods are Microhoned per hour. Tests have disclosed that two of these machines will out-produce, both in quality and quantity, five grinders or four old-style single-spindle honing machines. The bore that rotates on the crankshaft is made straight, round and to size within 0.0003 inch.

The soft metal-faced sleeve, that forms the bearing surface between the rod and crankshaft, must be backed up by a surface that gives it full support

so the load is evenly distributed over its entire area. The finishing of this surface with modern Microhoning equipment assures that the rods will give the best possible service.

The operator only loads and unloads the rods in the fixtures. The fixtures allow the rods to float and align themselves with the tools. As the rods are Microhoned to the desired size, the Microsize unit ends the cycle by withdrawing the tools and indexing the fixture. As the next rods are positioned under the spindles the next cycle is started automatically.

Any type or degree of surface finish may be generated and duplicated with Microhoning to provide for the mating of the rod and the bearing sleeve and the dissipation of the heat generated in the bearing.

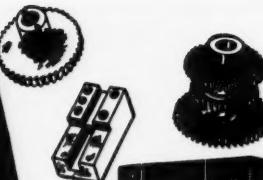
Through the use of the Micromatic Hydrohoner equipped with Microsize, the high production of finer and more accurately machined automobile parts is assured. To this may be added the substantial reduction in work handling which the automatic feature of this machine provides.



Illustration showing Micromatic Hydrohoner in operation

# HEAT TREAT

**SMALL PARTS, TOOLS & DIES  
In Your Own Plant**



- Install anywhere by simple wire connection. Quiet in operation. No fumes or odors—no ventilating required.
- Any intelligent man can operate furnace with automatic temperature control, using established procedures.
- Operating cost under 4¢ per hour to hold 1600° F. in Model 3 furnaces, with 2¢ per kw.-hr. rate. Others in proportion.

**NOW YOU CAN** heat treat, harden and temper small parts in your own plant . . . without experienced heat treaters. Economical to install and use, Cooley Electric Furnaces operate efficiently at high or low heats, and save your large furnace time for work requiring large volume capacity. Here are some profitable uses:

**PRODUCTION HEAT TREATING** of small parts . . . Small batches . . . Running pilot lots to pre-determine mass production techniques . . . Emergency repairs . . . Industrial and laboratory testing . . . Miscellaneous controlled heating jobs.



CHAMBER	8" W	6" H	14" L	10" W	6" H	18" L	8" W	6" H	14" L
MAX. TEMP.	1850° F.			1850° F.			2000° F.		
AMPERES		14.8 at 230 v.			19.6 at 230 v.			20.2 at 230 v.	6
WATTS		3400			4500			4650	
MODEL*	MH-3	VH-3	MK-3	VK-3	MH-4	VH-4	MK-4	VK-4	VK-5
PRICE	200.00	230.00	250.00	280.00	295.00	325.00	345.00	375.00	VK-6

- \* M models complete with hinged door and hearth plate.
- V models have counterweighted vertical lift door.
- K models include Selective Power Modifer for input control to correct temperature lag.

## FORCED CIRCULATION AIR DRAW FURNACES — Write for data.

### FREE LITERATURE

**NEW CATALOG**  
completely describes all models and applications for each. Write today for your copy . . . no obligation.



### DEALERS AND DISTRIBUTORS WANTED!

Good territories open on this extensive line of self-contained small electric furnaces. Investigate now.

**COOLEY ELECTRIC MANUFACTURING CORP.**

34 South Shelby Street Indianapolis 7, Indiana

INDIANAPOLIS MACHINERY EXPORT CORP.  
Export Manager, 44 Whitehall Street, New York, New York

## Guest Editorial

By GEORGE S. BENSON  
President, Harding College, Searcy, Kansas

MOST people thought Henry Ford's ideas about putting wheels under every American were just a lot of bunko. They just couldn't see how anything like that could be done. Some of Ford's early partners failed to grasp the idea, for they thought of automobiles as belonging to the rich. Ford's idea was too "harebrained" for them. They couldn't understand how anybody could possibly make a living selling cars to "poor" people.

But Henry Ford had the grain of an idea and the courage to see it through. America was a nation that encouraged such things. With an original investment of \$28,000, he put the nation literally on wheels. Mass production was brought into its own, and costs came down. Ford wanted to make only a small profit on each car, and this sold millions of them. Competitors had to offer good values, too.

Tin Lizzie and her imitators called for roads. Dozens of new industries came into being, in the building of roads. Our highways would circle the globe 41 times. Lizzie and the others had a thirst for gasoline. America's petroleum industry grew enormously. Filling stations had to quench that thirst. All these things made jobs. America became an industrial power, with this Ford-inspired motive power all the while adding to her efficiency and activity.

This new mass production created great industrial empires; mines for coal and iron, rubber plantations, timberlands and saw mills, hydroelectric works, chemicals, glass, textiles. The result was more and more jobs, bigger and bigger payrolls, more and more goods and products that people wanted. Then, with our cars we became a touring nation. All our states became neighbors. We came to know the face of America, the beautiful.

Out of that \$28,000 and his idea, Ford developed a great industrial empire, with factories and assembly plants and branch offices. Yet, aside from the factories and the equipment that he owned, Henry Ford probably never owned more than 2 per cent of the wealth that he created. He was called a billionaire, but he counted his resources in buildings and machinery, not in money.

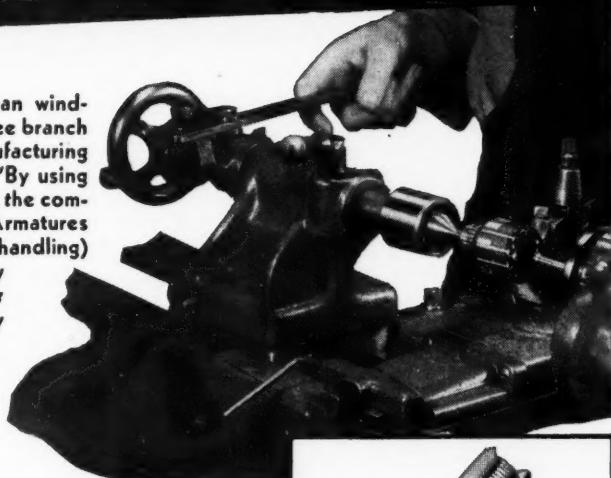
Ford was free to plow back his earnings into an industrial empire that created jobs and produced wealth, mostly for other people. There were no personal income taxes to penalize individual effort. In fact, corporation taxes did not begin until Ford's industry was five years old, and then the tax was only 1 per cent. It did not exceed 13 per cent any year until 1932. Today, taxes are a multi-million dollar item on many a company's books.

Demands from the tax collector have made impossible a contribution like Ford's from any individual American in this generation. Present tax laws, and mushrooming growth of a revenue-taking government, make it almost certain that there will not be another Henry Ford, or anyone like him. Are we thus penalizing the future of America? Who knows what need may arise for the genius of a Ford, in years to come?

Our nation must never lose its inventive genius. This genius can best thrive in a climate of complete economic freedom. The spirit of industrial venture that Ford typified must be kept alive, for the good of America. Ford's contribution brought untold blessings to all of us. We should not make it impossible, through heavy taxation burdens, for any future Henry Fords to develop in America.

# They Cut Job Time in Half... with IDEAL Live Centers

Mr. Paul Schmidt, foreman winding department, Milwaukee branch of the John Oster Manufacturing Co., Racine, Wis. says: "By using Live Centers when turning the commutators on our Wound Armatures we have reduced the (handling) time by approximately 50% . . . obtain a heavier cut . . . reduce heating by friction."



This case history is typical of what's being reported all over the country. On light and heavy turning jobs, wherever they are used, Ideal Live Centers are raising both quantity and quality of lathe work, cutting production costs. Because they turn with the work, even on the lightest turning jobs, Ideal Live Centers eliminate all friction between work and center. There's no grabbing or gouging, no time loss for lubrication or grinding. Work is more accurate, spoilage is reduced. Deeper cuts and higher turning speeds are safely achieved. Ask for information and a free demonstration on your own work.

**IDEAL INDUSTRIES, Inc., Sycamore, Ill.**



Also Heavy Duty Live Center — built to carry heavy loads. Accurate to .0005.



Distributed Through  
**AMERICA'S LEADING WHOLESALERS**

Canadian Distributor: Irving Smith, Ltd., Montreal

# *News of the Industry*

## Norton Company Dedicates New Plant

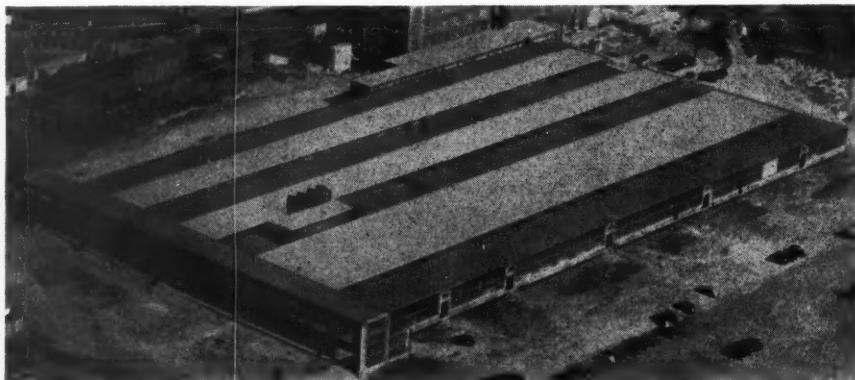
The Norton Co., Worcester, Mass., dedicated a new manufacturing plant in a private ceremony on August 30. Over 602 feet long and 320 feet wide and containing approximately 5 acres of manufacturing space on one floor, the building is said to be the largest in the world for the manufacturing of grinding wheels.

George N. Jeppson, chairman of the board of the Norton Company, delivered the opening dedicatory address on the subject of "A Vision Becomes a Reality," at the conclusion of which he turned the new plant over to Milton P. Higgins, president. Mr. Higgins gave the actual dedication talk. Other speakers were Ralph F. Gow, executive vice president, and Wallace T. Montague, vice president. Andrew B. Holmstrom, vice president and general manager of the Abrasive Division, was chairman of the program and introduced the speakers.

The total cost of the new building, designated as Plant 7, was estimated by company officials at \$4,300,000, of which \$1,800,000 was for the building alone and

\$2,500,000 for equipment. The huge building lends itself ideally to straight line production, and parallel manufacturing lines have been set up throughout the 602-foot length of the plant. The building contains the latest equipment in the way of fluorescent lighting, ventilation, dust collection, and fire protection, as well as modern locker and shower rooms, cafeteria, hospital, and offices. All facilities were planned to accommodate 800 persons employed on two shifts.

The building has glass and brick walls built around a steel frame. Eighty-two per cent of the wall area is devoted to windows to permit entry of a maximum amount of daylight. The roof is of a Monitor type design to further permit entry of daylight and to allow for maximum ventilation, and is constructed of precast concrete slabs above which is 2 inches of insulation to keep the plant cool. Because of the many continuous lines of production, the building has cross-over bridges to permit the personnel to go back and forth to their jobs by the easiest and most direct route. The inside of the entire plant has been painted a shade of light green considered restful for the eyes, and the cafeteria, hospital, and offices have acoustic ceilings.



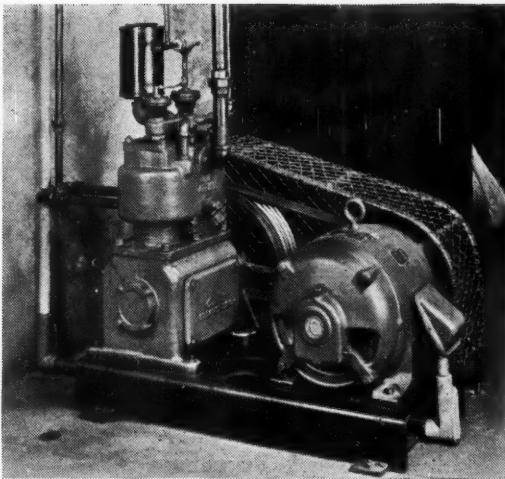
Airplane View of New Norton Plant 7

*Curtis Timken Bearing Air Compressor. Sizes from  $\frac{1}{4}$  to 50 H. P., inclusive.*

## RELIABILITY That Pays Off in Low-Cost Performance

# CURTIS

## TIMKEN BEARING AIR COMPRESSORS



Every Curtis Air Compressor has been carefully engineered, made of the highest quality materials and precision built throughout.

### Check These Design Features:

- Timken Roller Bearings
- Automatic Pressure Unloader
- Self-Oiling — Positive Lubrication
- Fully Enclosed Design
- Carbon-Free Disc Valves
- Precision Construction

Capacities from  $\frac{1}{4}$  to 50 H.P. (up to 300 CFM).

Write today for full information on Curtis Air Compressors, Air Hoists and Air Cylinders.

### PNEUMATIC MACHINERY DIVISION

*of Curtis Manufacturing Company*

1913 Kienlen Avenue • St. Louis 20, Missouri

*94 Years of Precision Manufacturing*

I-48-1B



Plant of The Cincinnati Planer Company Recently Purchased by Giddings & Lewis Machine Tool Company

## Giddings & Lewis Purchases Cincinnati Planer Company

Purchase of all the capital stock of The Cincinnati Planer Co., Cincinnati, Ohio, has been announced by the Giddings & Lewis Machine Tool Co., Fond du Lac, Wis. Ralph J. Kraut has been elected president of Cincinnati Planer. Other

officers are J. H. Daum, Cincinnati, executive vice president and general manager; Jesse Daugherty, vice president and works manager; W. E. Rutz, Fond du Lac, vice president; R. J. Steiner, secretary and comptroller; R. E. Hanson, Fond du Lac, treasurer and counsel; R. D. Allison, assistant treasurer and assistant secretary; E. W. Kroeger, assistant sales manager; C. J. LaMoth, executive assistant; W. B. Wigton, chief electrical engineer; J. W. Knippling, purchasing agent; and J. G. Daum, production manager. The board of directors of the Cincinnati company will consist of Mr. Kraut, Mr. Rutz, Keith F. Gallimore of Fond du Lac, J. Roy Porter of Chicago, Joseph M. Conway of Green Bay, William E. Buchanan of Appleton, J. H. Daum, and Attorney Hanson.

The Cincinnati Planer Company was formed as a partnership in 1898. In March of the following year the business was incorporated in Ohio with a capital of \$30,000 and was named The Cincinnati Planer Company. The Cincinnati Planer line was supplemented with a line of vertical boring mills in 1908, and of planer type milling machines in 1925. These machine tools are used extensively in all metal-working industries.

The present plant and office building, located in Cincinnati, were built during the period from 1906 to 1910, expanded in 1917, and again in 1942. Facilities are adequate and modern with floor space totaling 105,000 square feet. The Cincinnati Planer Company has approximately 400 employees. The corporate entity will be retained and it will continue to operate at Cincinnati as a wholly-owned subsidiary of Giddings & Lewis.

## STERLING DRILL GRINDER



### CAPACITY:

$\frac{3}{8}$ " to  $2\frac{1}{2}$ " drills.

5" x 9" adjustable table.

MOTOR:  $\frac{1}{2}$  hp.

3450 rpm.

NET WT: 250 lbs.

CRATED: 320 lbs.

**McDONOUGH MANUFACTURING CO.**

EAU CLAIRE, WISCONSIN, U. S. A.

# AIR OILED

by **NORGREN**  
**Lubricators**

The fastest, most positive method known for lubricating air driven tools and cylinders.

Automatically inject clean oil into the airstream, creating an oil-air fog which travels with the air. This coats all moving parts of the tool or cylinder with protective film of oil.

Works only when the tool runs. Protects all the time against

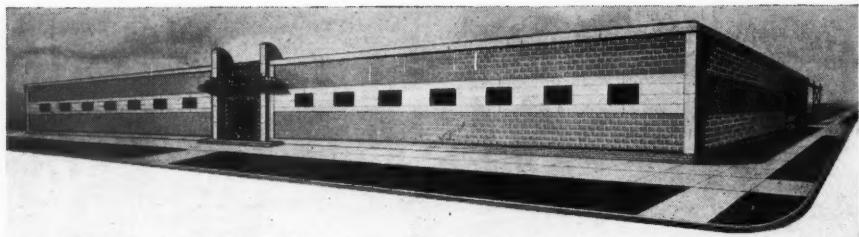
- (1) **excessive wear while tool operates**
- (2) **rust and corrosion while tool is idle**

End lubrication troubles the NORGREN way . . . oil the air that drives the tool.

Write C. A. Norgren Co.  
222 Santa Fe Drive,  
Denver 9,  
Colorado.

*Norgren*





Architect's Drawing of New A.S.T.E. Central Office Building

### New Quarters for A.S.T.E.

Its own building to house the activities and central office of the American Society of Tool Engineers has become a reality. Construction of the new quarters is now under way and the A.S.T.E. will move its headquarters from the Penobscot Building to the attractive new edifice by November 1, according to an announcement by I. F. Holland, national president of the society.

The building is being erected on a 224 x 100-foot tract on Puritan Avenue between Monte Vista and Manor Avenues in northwest Detroit. The 12,000 square feet of floor space will be available on one floor in a modern type of building. The new quarters will immediately house the offices of the executive secretary and his staff, other key employees of the society, and the offices of the various national committee activities.

The floor plan of the new building features a large general office area with smaller offices to be assigned to executives and special departments. Enlarged facilities will be available for mailing and shipping, as well as more room for the accounting department equipment. Building specifications call for an oil-fired forced warm air heating system, a 30-ton

ice capacity air conditioning plant, and a combination garage and loading dock. A combination conference room and reference library will be an additional feature of the new headquarters.

### A.S.T.D. Fifth Annual Conference

The American Society of Training Directors, a national organization embracing a membership of nearly 500 in 12 affiliate chapters, will hold its fifth annual conference at the Hotel Carter, Cleveland, Ohio, March 3, 4, and 5, 1949.

The society, which is composed of personnel engaged in job training activities in industries throughout the country, is making plans to cover all of the latest developments in the training field during its three-day conference.

### Houghton Opens New Plant in Canada

E. F. Houghton & Co., Philadelphia, Pa., has announced the completion and opening of its Canadian affiliate company's new plant in Toronto. Opera-



### MILWAUKEE SURFACE PLATES

In sizes ranging from  $3\frac{1}{4}''$  x  $4''$  to  $48''$  x  $96''$ , MILWAUKEE SURFACE PLATES meet every need for accuracy and durability. They are sturdily constructed of the highest quality semi-steel and the table surface can be planed, ground, or scraped depending upon the degree of exactness required.

*Write for your free catalog today!*

**J. C. BUSCH COMPANY**

*Engineers and Machinists Since 1907*

126 E. Pittsburgh Ave.

Milwaukee 4, Wisconsin

# UNITED STATES ELECTRICAL TOOLS

*America's Greatest and  
Most Complete Line—*

**PROVED QUALITY**

**PROVED ECONOMY**

**PROVED PERFORMANCE**

**WHEN** industry calls  
...these electric tools  
answer "here" for  
the innumerable jobs which demand  
precision - efficiency and instant re-  
sponse. Maximum savings in time,  
labor and costs . . . minimum mainten-  
ance and most economical prices.

- Drills
- Grinders
- Surfacers
- Polishers
- Sanders
- Tappers
- Hole Saws
- Buffers
- Valve seat grinders
- Valve refinishing shops
- Flexible shaft machines

### **5/8" Heavy Duty Drill**

Rugged design. Motor of tremendous power for driving cylinder hones. An exceptional tool for bridge, railroad and major construction operation. No. 2 Morse Taper Socket in place of geared chuck at no extra cost. 100% anti-friction bearings throughout. Ball bearing on armature. Ball and needle-roller on chuck and intermediate spindle. Also available in  $\frac{3}{4}$ " and  $\frac{7}{8}$ " heavy duty drills.



**Model 58HD**

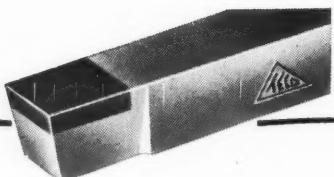
**CONTACT YOUR JOBBER . . .**

**HE CAN SUPPLY YOU**

Leading automotive, mill supply, hardware, elec-  
trical, plumbing, machinery and farm implement  
jobbers carry United States Electrical Tools IN  
STOCK.



**The UNITED STATES ELECTRICAL TOOL Co.**  
CINCINNATI, OHIO



## CARBIDE USERS

**Get** — more pieces per grind  
 — more grinds per tool  
 — less down time  
 — lower tool cost

with —



## CEMENTED CARBIDE

### LOOK AT THESE CASES\*

Turning O.D. Cylinder Liner:	
Pieces per grind (TECO) .....	28
Best previous carbide.....	5
Facing Cast Iron Valve Flange:	
Hours per grind (TECO) .....	20
Best previous carbide.....	12

\*Many more on file.



TRY A RUN with TECO Cemented Carbide and be convinced. Specify TECO when ordering carbide tools or blanks from your fabricator or distributor. Carbide tools tipped with TECO are more productive, always uniform. Our engineering department is at your service on any carbide problem.

**TUNGSTEN ELECTRIC CORP.** 562 39th St.  
"UNION CITY, N. J.

Manufacturers of Tungsten Carbide—from ore to finished material—for over a quarter century.



## CEMENTED CARBIDE

tions are under the direction of Edward H. MacInnis, vice president and director of sales. The same products for metal and textile processing and maintenance will be made as are supplied from Houghton's four plants in the United States.

Located at 100 Symes Road in northwest Toronto, the new property covers 2½ acres and is so situated as to take full advantage of both rail and truck shipping facilities.

### Did You Know?---

Milton Grandquist Co., 201 Washington Ave., North Minneapolis, Minn., has been appointed sales representatives of The Cleveland Tapping Machine Co., Hartville, Ohio, and will handle the sale of the entire Cleveland line of standard and special single and multiple hole precision production tapping machines and accessory jigs, fixtures, and feed devices in Minnesota, western Wisconsin, northern Iowa, and eastern North and South Dakota. The Cleveland Tapping Machine Company has also reaffirmed Robert R.

Stevens Machine Co., 1706 Olive St., St. Louis 3, Mo., as its representative in Missouri, southern Illinois, Kansas, Oklahoma, eastern Nebraska, and eastern Colorado, and C. J. Harter Machinery, with offices at 3833 Navigation Building, Houston, and 601 Gulf-States Building, Dallas, in the State of Texas.

Ercell R. Stevens of the Norton Co., Worcester, Mass., has been appointed abrasive grain engineer in the Chicago district. The area formerly covered by W. T. Seiter has been divided into two territories which will be covered now by both Mr. Seiter and Mr. Stevens.

The Baldwin Locomotive Works, Philadelphia 42, Pa., has announced that Lewis W. Metzger, vice president, has been made executive assistant to Marvin W. Smith, executive vice president, and will assist Mr. Smith in all phases of Baldwin's operating activities. Announcement has also been made of the appointment of James R. Weaver as manager of manufacturing, Eddystone Division, and John S. Newton as manager of engineering, Eddystone Division.

The Cyril Bath Co., 6988 Machinery Ave., Cleveland 3, Ohio, machine tool and special machinery manufacturer, has acquired the Goodyear patents on roto forming in the United States, Canada, and England.

EVERY  
STATE  
WANTS BAY  
STATE

**PRECISION  
PERFORMANCE**



ON THE SHELVES OF  
YOUR NEARBY INDUSTRIAL  
SUPPLY DISTRIBUTOR  
IN EVERY STATE

**BAY STATE TAP & DIE CO.**  
**MANSFIELD, MASS.**

## Did You Know?---

The Barber-Colman Co., Rockford, Ill., has appointed Paul Wichehaus, Apex Machine Tool Supply Co., 312 N. McDowell St., Charlotte, N. C., as exclusive distributor of Barber-Colman hobbing machines, hob sharpening machines, hobs, cutters, and reamers in the States of North and South Carolina.

John Crampton, 1114 Chester Ave., Cleveland 14, Ohio, has been appointed a representative of the Detroit Broach Company.

The Federal Machine and Welder Company has arranged to purchase the plant and facilities of the Warren City Manufacturing Company from the U. S. Navy. Federal has been operating this plant, building a complete line of all-welded steel presses, since January 1946, when it acquired the stock of the Warren City Manufacturing Company.

Robert L. Stubbs, expert on Cecostamping and sheet metal fabrication, has been retained by the Chambersburg Engineering Co., Chambersburg, Pa., originator of the Cecostamp.

Reorganization of operating personnel and a change in sales and manufacturing policy have been announced by J. W. Kinnear, Jr., executive vice president of the Firth Sterling Steel & Carbide Corp., McKeesport, Pa. Major personnel changes in the new organization plan include the appointment of W. J. Loach as manager of carbide development and quality control; Charles W. Iams, Jr., manager of carbide production and fabrication at the McKeesport plant; E. G. Moffat, works manager of the corporation's recently completed plant at Milford, Conn.; and A. B. Vestal, superintendent of plant engineering at McKeesport. L. G. Firth, in addition to his duties as president of the corporation, has accepted the office of director of technical development.

The Reltok Diamond Tool Co., 10 Franklin St., Allston 34, Boston, Mass., has announced that Frank W. Kotler former vice president and general manager of the F. F. Gilmore Co., Boston, has become affiliated with Reltok, manufacturer of grinding wheel dressers, turning and boring tools, diamond penetrators, diamond recording stylii, engraving and etching tools, and diamond contacts.

For ANY Size Machine

# Chandler-Duplex

COMBINED Boring  
and Facing Toolhead

A Boring Head  
That Won't Face  
Is NOT Complete

A Few  
Openings  
For GOOD  
Distributors

MODEL 4 $\frac{1}{2}$

MODEL 3 $\frac{1}{2}$

MODEL 2 $\frac{1}{2}$

MODEL 1 $\frac{1}{2}$

MODEL "D"

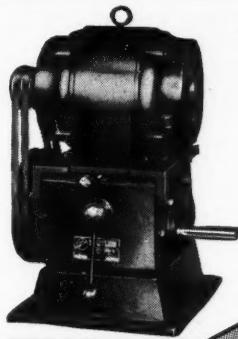
MODEL "J"

NOW! REDUCED IN PRICE

Accuracy ... Stamina

WRITE TODAY  
For Complete  
Details . . . .

CHANDLER TOOL CO  
MUNCIE, INDIANA, U. S. A.



## The New **TURNER** Multi-Speed **POWER UNIT**

Power transmission FLEXIBILITY...now available for industrial applications. Where pre-determined speeds are needed, or in problems of speed production with multiple speeds, Turner has the answer. Just a flick of the wrist selects the correct speed, regardless of

changeable conditions. Ideal for mixing, agitating, printing presses, textile, wood and paper processing, feed rolls and conveyors, wire and textile spinning...scores of other applications. In many cases, replaces hard-to-get slip-ring and multiple-speed motors.

**Built to  
Deliver the Power**

*The Famous*

## **TURNER UNI-DRIVE**

Selective Sliding Gear Transmission

Make older machines more versatile. Operate each independently. Eliminate overhead line and counter shafts with Turner Uni-Drive! Save time, cut costs...3, 4, 6, 9 speeds to meet every need. Standard brackets for quick installation on lathes, shapers, screw, milling and hobbing machines, boring mills...many others.



**THE TURNER UNI-DRIVE CO.**

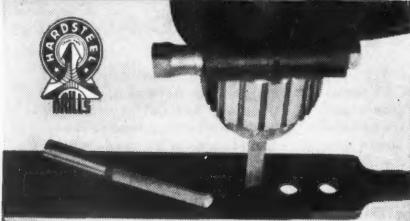
(Sales Division, Turner Machinery Co.)

3416 Terrace Street

Dept. 105

Kansas City 8, Mo.

## Drill Hardened Steels without Annealing with "HARDSTEEL"



Don't let anyone tell you that hardened steels must be annealed before drilling, countersinking, counterboring or reaming.

With "HARDSTEEL" drills you can produce accurate, smooth holes in steel hardened by any process—oil-hardened, water hardened, cyanided, nitrided, and they work equally well on work-hardening steels and high carbon-high chrome steels of any degree of hardness.

"HARDSTEEL" drills used with standard drill presses cut costs in production shops because parts drilled after hardening always match at assembly. In service shops they save time and material and permit engineering changes calling for additional drilling to be made after parts are full hardened.

Write for a copy of the "HARD-STEEL" Operators Manual showing how "HARDSTEEL" drills are now functioning in thousands of plants in parts recovery operations.

You Harden It — We'll Drill It —  
with "HARDSTEEL"

"HARDSTEEL" Tool bits make  
faster, deeper cuts on steels  
and non-ferrous alloys.

**BLACK DRILL CO., Division Black Industries**  
1372 East 222nd Street • Cleveland 17, Ohio

**"HARDSTEEL"**  
DRILLS • TOOL BITS • SPECIALS

## Did You Know?---

According to announcement made by the Rudel Machinery Co., Inc., New York 17, N. Y., **David F. Robinson** and **William E. Rudel** have been appointed vice presidents and district managers, Mr. Robinson being in charge of the New York and Hartford territories and Mr. Rudel in charge of the Boston office and the other five New England states. **Ransom Soper** has been named to take charge of the Long Island territory. **George F. Teimpidis** has joined the organization as chief engineer to have direction of quotations made from the New York office, as well as assisting the sales force in problems of engineering. **J. E. Baxley** has also joined the company in the capacity of hydraulic engineer.

Hufford Machine Works, Inc., Redondo Beach, Calif., manufacturer of hydraulic stretch forming machines, hydraulic presses, and special hydraulic equipment, has appointed **Walter George Wheeler**, an engineering graduate of California Institute of Technology and a member of the A.S.M.E., as chief engineer.

The Rapids-Standard Co., Inc., Grand Rapids, Mich., manufacturer of material handling equipment, has announced the adoption of the term "RapiStan" as a trade mark to designate all equipment manufactured by the firm.

**Gilbert B. Richards** has been appointed general sales manager of Firth Sterling Steel & Carbide Corporation with headquarters at McKeesport, Pennsylvania, to co-ordinate the sales of the steel, carbide and tool-making divisions of the company.

**Die-Mold Corporation**, designer and builder of tools, dies, and molds for the die casting, permanent mold casting, and plastic industries, has moved into a new brick factory building at 6619 Motor Ave., Milwaukee 13, Wis., where increased floor space for expanded shop and office facilities is available.

Recent changes in the portfolio of Power Plus Products Co., 2228 Bellevue Ave., Detroit 7, Mich., have been announced by Frank G. Yates, chairman. **Dean W. Johnston** has been appointed manager of sales and distribution; **Elwyn Kaake**, chief engineer in charge of engineering and production. **Charles Billadeau** is in charge of production of the Electrical Division; **Thomas Jones**, the Armature Wedge Division; **Philip Brod**, the Plating Division.

# SANFORD SURFACE GRINDERS

## Model MG

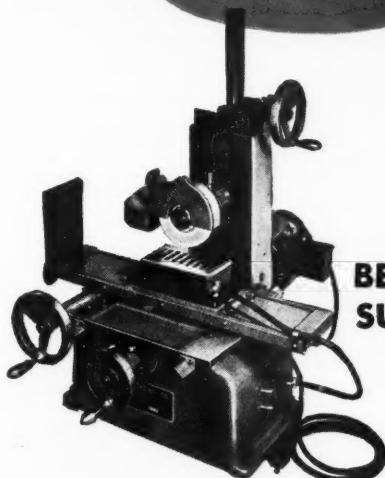
Handles many odd size tool room and production jobs, due to its capacity of 8" x 12" x 12". Actual movements — Transverse 8 $\frac{3}{4}$ " — Longitudinal 13" — Vertical 12" (under 7" wheel).



## BENCH SURFACE GRINDER

## Model SG

A sensitive, highly accurate machine specially designed "for the job that fits in your palm." Actual movements — Transverse 4" — Longitudinal 8" — Vertical 6" (under 4" wheel).



**WRITE FOR COMPLETE DETAILS**

**SANFORD MANUFACTURING CO.**  
1021 COMMERCE AVENUE  
UNION, NEW JERSEY

## Did You Know?---

**H. William Kopf**, manager of the Detroit office of Pratt & Whitney, Division Niles-Bement-Pond Co., West Hartford 1, Conn., died August 13, 1948 at the age of 66 after an association with the company for 46 years. **Elmer E. White**, Milwaukee sales engineer for P&W small tools and gages, died July 21, 1948 at the age of 52, having represented Pratt & Whitney in the Milwaukee area since 1927.

**Max C. Jones**, president, has announced the appointment of **Robert O. Blackford** as advertising and sales promotion manager of the Michigan Abrasive Co., Detroit, Michigan.

The B. C. Ames Co., Waltham, Mass., has appointed the **Geoffroy, Co.**, P. O. Box 67, Capitol Hill Station, Denver 6, Colo., as its exclusive agent in Colorado, Utah, and Wyoming for the complete Ames line of micrometer dial gages and indicators.

**Carl A. Carlson**, sales engineer for the Norton Co., Worcester, Mass., died Sunday, August 29, in a plane crash near Winona, Minnesota.

To better serve its customers in the Philadelphia area, the **Gisholt Machine Co.**, Madison, Wis., manufacturer of turret lathes, automatic lathes, and balancing machines, has opened a new and larger branch office at 315 McClatchy Bldg., 69th and Market Sts., Upper Darby (Philadelphia), Pa. **P. R. Foseid** will continue in charge of the territory, assisted by **Ervin A. Huza**.

**Bremen Bearings Inc.**, Bremen, Ind., has been formed by **Clyde C. Cone**, formerly associated with Torrington and Kaydon Engineering, to produce precision needle bearings in large and small quantities and in all sizes.

The trustees of **The James F. Lincoln Arc Welding Foundation** have announced September 15, 1948 to April 1, 1949 as the period for submitting entries in its annual Engineering Undergraduate Award and Scholarship Program. The current competition is the second in a ten-year series of programs which offers to engineering undergraduates (including agricultural engineers) the opportunity to compete in the preparation of papers on various phases of welding for monetary awards, as well as scholastic and industry recognition.

# Motorized HOPPER UNITS

*Speedy  
Sturdy  
Dependable*

## FASTEST FEED . STURDY WIDELY ADAPTABLE

For use with Presses, Centerless Grinders, Thread Rolling and Slotting Machines, or any special machine.

### Successfully Feed

Screws, Screw Blanks, Rivets, Pins, Discs, Nuts, Bearing Rollers, Steel Balls, Washers and Miscellaneous Items, such as Screw Machine Parts, Stampings, Etc.

*Send Samples for Details and Prices*

**WRITE FOR CATALOG**



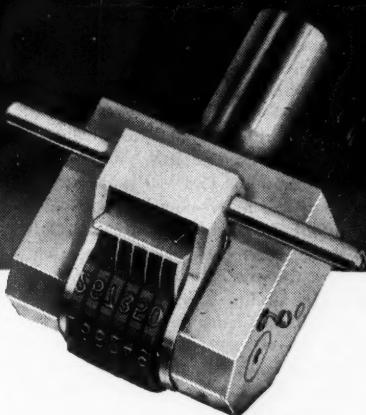
**DETROIT POWER SCREWDRIVER CO.**

2807 West Fort Street,  
Detroit 16, • Michigan



*Noblewest*  
**AUTOMATIC  
NUMBERING  
HEADS**

Noblewest automatic numbering heads are the product of long experience and guaranteed to be the finest obtainable. Standard models are available in any size numbers from  $1/40"$  to  $1/2"$ . Special numbering heads made to any requirements, including embossing heads and numbering heads combined with dies. Write for complete information to Noble & Westbrook Manufacturing Co., 25 Westbrook St., East Hartford 8, Connecticut.



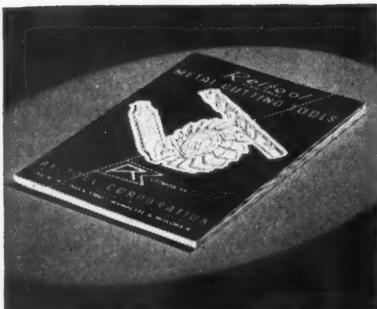
*Standard of the  
Marking Industry*

MARK IT  
BEST WITH

NOBLEWEST  
MANUFACTURED  
MARKING  
DEVICES

# NOBLEWEST

EQUIPMENT FOR MARKING • GRADUATING • EMBOSsing • NUMBERING



## ...Have You Seen the NEW Catalog by RELTOOL?

This attractive new book belongs in your files. Illustrates and describes the Complete, Augmented Line of Reltool Metal Cutting Tools which includes:

- Center Drills—Standard and "Shock-less" Regular and Bell type.
- End Mills and End Mill Holders.
- Small End Mills—Special High Speed — ground out-of-the-solid.
- Milling Cutters — All Types — Key Seat Cutters, Form Tools.
- Metal Slitting Saws — All Types — Side Chip Clearance and Screw Slotting Saws.
- Special Saws—Rotary Shears, Formed Tooth Saws, Tenacious Saws, Jewelers Saws, and others.
- Reamers, Center Reamers, Counterbores, Taps.
- Cut Off Blades, Tool Bits—All Grades.
- Accessories —Driving Collars, Equalizing Collars, Stub Arbors, Lathe Mandrels.

Get acquainted with Reltool Metal Cutting Tools through this Complete, Attractive Catalog. Write for it, write now!

**Reltool**  
CORPORATION  
RELIABLE METAL CUTTING TOOLS  
710 W. MICHIGAN STREET • MILWAUKEE 3, WIS.

A 5486-1/2

### Did You Know?---

**Clyde Edwards**, who was formerly in an executive position with the General Motors Corporation and until recently represented the Gatco Bushing Co., Detroit 7, Mich., in Wayne County, has now taken over the entire State of Michigan as sales and service engineer for Gatco.

The election of **Walter W. Kempfert** as vice president in charge of sales has been announced by Bolton Sullivan, president of Skilsaw, Inc., Chicago, Ill., manufacturer of portable electronic tools. Mr. Sullivan has also announced that **J. J. Topolinski**, works manager of Skilsaw, Inc., has been elected vice president in charge of manufacturing.

**Sherrill S. Deputy**, assistant sales manager of American Wheelabrator Equipment Corp., Mishawaka, Ind., since 1946, has been appointed sales manager of the company.

**Lester G. Sigourney**, general sales manager of New Departure, Division of General Motors Corp., Bristol, Conn., has retired after an association with the firm of 40 years.

**Wilbur C. Massow**, assistant sales manager of Walsh Press and Die Company, Division of American Gage & Machine Company, passed away July 26 in Chicago after a very brief illness.

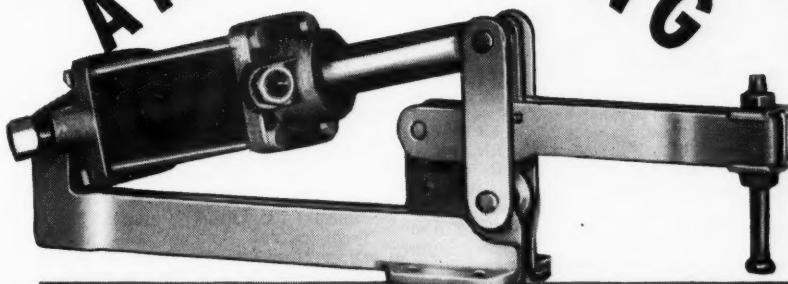
**Hammond Machinery Builders, Inc.**, Kalamazoo, Mich., has announced the appointment of **Arthur L. Perkins**, 5C River Park Apartments, White Plains, N. Y., as its Eastern representative.

**Neill C. Hurley**, 78, chairman of the board of the Independent Pneumatic Tool Co., Aurora, Ill., died August 2 at his home in River Forest, Illinois, following a heart attack.

The appointment of **E. W. Chapman** as vice president in charge of engineering has been announced by **G. B. Tuthill**, president of the Tuthill Pump Co., Chicago, Illinois.

The complete company setup, including equipment, patents, and so on, of the Eastern Cutter Corp., 30-32 Littleton Ave., Newark 7, N. J., has been repurchased by **A. R. Abeel, Sr.**, and will be under the guidance and presidency of **Mr. Abeel**, who has also purchased the entire plant and assets of the L.T.S. Cutter Co., Inc., 91 Edison Pl., Newark.

ANNOUNCING



## LAPEER'S NEW MODEL AO-400 AIR-OPERATED CLAMP

Here's a wonder worker in air-operated clamps. Its maximum clamping pressure is 400 lbs. with 85 lbs. air pressure. The double-acting feature assures parts being securely held in case air pressure accidentally fails. Air pressure is required to unlock it.

Its versatility is especially recognized on remotely controlled as well as on multiple clamping jobs. One valve can control any number of clamps simultaneously.

Cylinders are available separately, Model CY-400  
for pressures up to 2000 psi.

Valves furnished at reasonable prices.

**KNU-VISE  
PRODUCTS**

**LAPEER MANUFACTURING CO.  
3056 DAVISON ROAD • LAPEER, MICHIGAN**

## Did You Know?---

The advancement of four executives in the coated abrasives division of Minnesota Mining & Manufacturing Co., St. Paul, Minn., has been announced. Allan H. Butz, former sales manager for related products, has been appointed general sales manager for related products and will also act as an advisor in the management group of coated abrasives and related products. Management of manufacturing of coated abrasive products will be the responsibility of C. C. March, formerly products manager in the manufacturing section. Alfred L. Gilstad has been promoted to manager of planning and service, previously being merchandising manager for "Safety-Walk" a non-slip floor surfacing product. The former sales office manager for the abrasives division, Gilmore A. Salmon, has been promoted to merchandising manager for all coated abrasives.

A jolly robust hunter with red coat has been adopted as an identifying symbol by the Michigan Abrasive Co., Detroit, Mich., for its advertisements devoted to Michigan "Red Coat" Metal-Working Abrasive Belts.

The appointment of P. J. Jensen, formerly executive engineer in the engineering and research department of the Carboly Co., Inc., Detroit, Mich., to the position of manager of the Michigan district for Carboly with headquarters in Detroit has been announced by K. R. Beardslee, vice president and marketing manager. Mr. Jensen succeeds M. E. Knoll who has retired after 19 years of service with Carboly.

Sperry Products, Inc., Danbury, Conn., has appointed Edward B. Lang, formerly with the public relations department of the General Electric Company in Bridgeport, as advertising manager.

The Butterfield Division, Union Twist Drill Co., Derby Line, Vt., has appointed W. V. Garfield district sales engineer for the company's line of taps, dies, reamers, screw plates, and other industrial cutting tools in Connecticut and western Massachusetts.

The Howes-Woods Co., Cambridge, Mass., manufacturer of Woods metal cutting hack saw blades and accessories, has appointed David A. Utiger sales manager of the Saw Division.

# Specials!

## CIRCULAR AND FLAT FORM TOOLS FOR *all* BAR MACHINES

Stites' Personalized Screw Machine Tool Service for Cams and Tools has now been broadened to include the manufacture of circular and flat form tools for all bar machines. Combined know-how and accuracy built into every tool.

Circular and flat form tools illustrated typify our diversified engineering and manufacturing facilities for Acme, Cleveland, Davenport, Brown & Sharpe, No. 00 and No. 6, and Warner & Swasey Machines. Deliveries to meet individual customer requirements.



# THE STITES TOOL CO.

1426 W. 3rd St.  
Cleveland 13, O.

254 MODERN MACHINE SHOP

October, 1948



# "Naked-Eye" Inspection is not enough at **AMERICAN SWISS**

Here you see an "American Swiss" inspector checking every detail of an "American Swiss" File *under a magnifying glass*. His job is to make sure each file is perfect in size, shape, cut and hardness. If he finds a flaw of any kind, the file is dropped into acid to

make sure it will never be sold, for there is no such thing as a "second quality" "American Swiss" File. For more than 45 years, the "American Swiss" standard has been "Only The Best Are Good Enough". Make that your "buy-word" when you need Swiss-Pattern Files.

*Buy from our Authorized Distributor.*

**AMERICAN SWISS FILE & TOOL CO.**

**410 Trumbull Street, Elizabeth 1, N. J.**

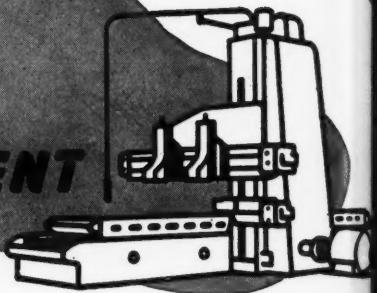
**ASK FOR THEM**

**BY THIS NAME**

*American Swiss* ★ THE BEST ★

**SWISS PATTERN FILES**

## NEW SHOP EQUIPMENT



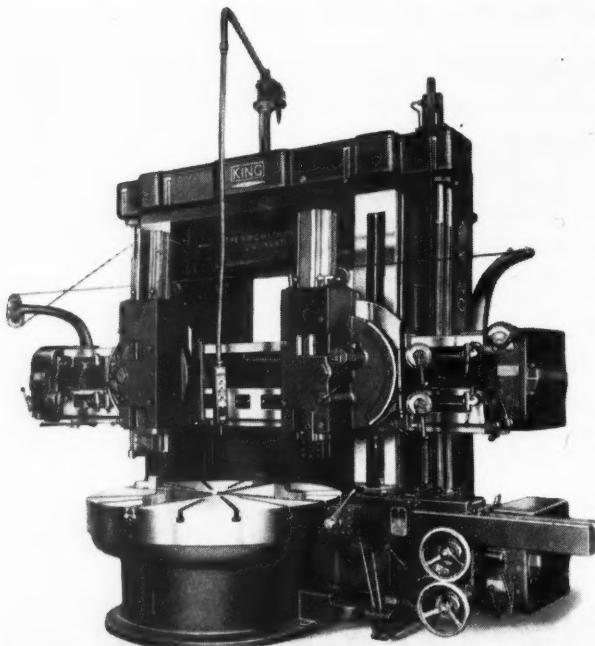
### King Vertical Boring and Turning Machine

A vertical boring and turning machine embodying features which are said to provide for maximum accuracy, versatility, and ease of operation, as well as unusually long service life, is now being manufactured by American Steel Found-

dries, King Machine Tool Division, Cincinnati 29, Ohio. Heavy and rigid construction, high power, wide range of feeds and speeds, and other advantages are said to make the machine particularly suited to the successful use of carbide tools.

The rectangular type heads of the machine are each equipped with four gib and have eight bearing surfaces. Close tolerances are said to be maintained at high speeds with heavy feeds. The weight and rigidity of the unit are claimed to assure continued high accuracy over long periods of use. According to the manufacturer, operation of the machine is simply, quickly, and precisely effected. All controls are located at the front of the machine within easy reach of the operator.

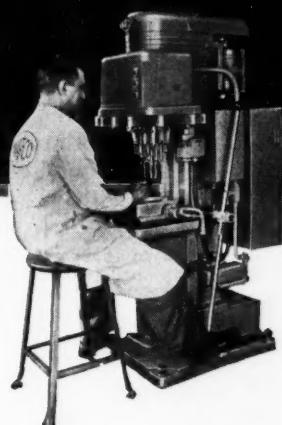
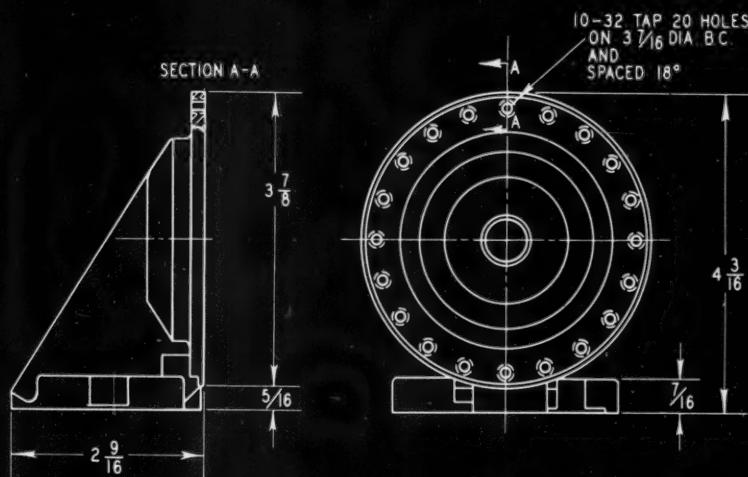
The King Vertical Boring and Turning Machine is available in a wide variety of head combinations and in 10 sizes, including single-column models in 30, 36, and 42-inch sizes and double-column models in 52,



King Vertical Boring and Turning Machine

# PRODUCTION INCREASED 100% over Previous Method

## with NATCO High Speed Sensitive Drilling and Tapping Machine



NATCO A33 Multi-Spindle Machines are built specifically to help you obtain more economical high speed, light sensitive drilling and tapping operations in your plant. They make possible remarkably high production and low hole cost in a wide range of small and medium sized work. Whether your production involves drilling and tapping operations in cast iron, in steel, in aluminum, in plastics or in wood, NATCO welcomes your inquiry and suggests that you send prints wherever possible. Write today!

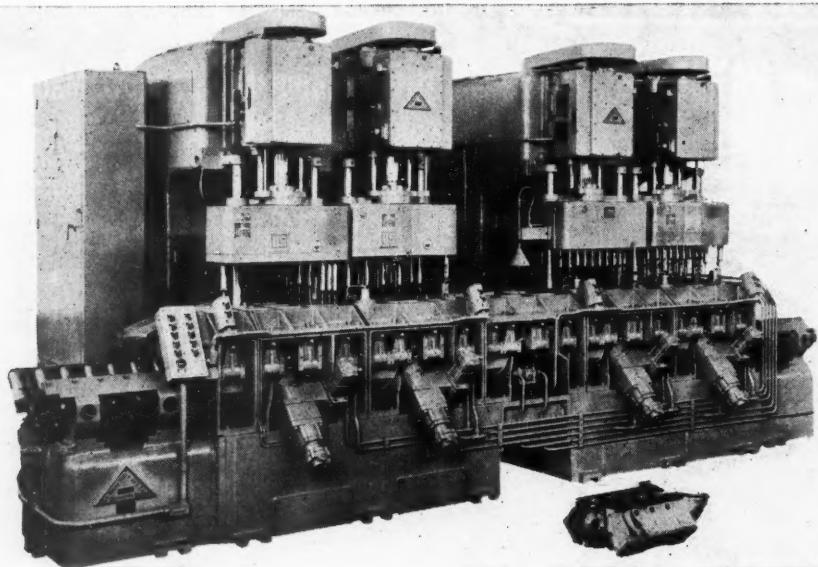
NATCO DRILLING, BORING, TAPPING AND FACING MACHINES

NATIONAL AUTOMATIC TOOL COMPANY, INC., Richmond, Ind., U. S. A.

Branch Offices: 1809 Engineering Bldg., Chicago • 409 New Center Bldg., Detroit • 1807 Elmwood Ave., Buffalo • 2902 Commerce Bldg., New York City

# NATCO

Call a Natco Field Engineer



LeMaire 7-Station Line Processing Machine

62, 72, 84, 100, 120, and 144-inch sizes. The machine shown in the accompanying illustration is a 72-inch size with two ram heads and side head.

### LeMaire 7-Station Line Process Machine

Developed by the LeMaire Tool & Mfg. Co., 2657 S. Telegraph Rd., Dearborn, Mich., the 7-station line processing machine shown in the accompanying illustration is specially designed for drilling,

reaming, chamfering, and counterboring the bottom face of a "V-8" cylinder block.

The machine consists of two main center base sections of rigid welded construction which support two columns, the work-holding fixtures, and index mechanism. Each column supports two LeMaire No. 5000 twin ram self-contained hydraulic drilling units with multiple spindle drill heads which move on hardened and ground guide bars that keep the heads in alignment with the work-holding fixtures. The two end bases of the machine support the loading and un-



**"SKELTON" TAPER REAMERS**

The Roughing Reamer with two cutting edges ground radial on a taper to correspond with hole to be reamed. Two opposite edges are "backed off" to govern chip thickness. This "safety edge" prevents "hogging in" or "chattering." A special feature permits straight, centralized holes, even though turret is out of line with spindle. Write for catalog 103 describing this reamer and the Helical Finisher also shown.

Morse, B & S and SAE Tapers in stock. Specials to order.

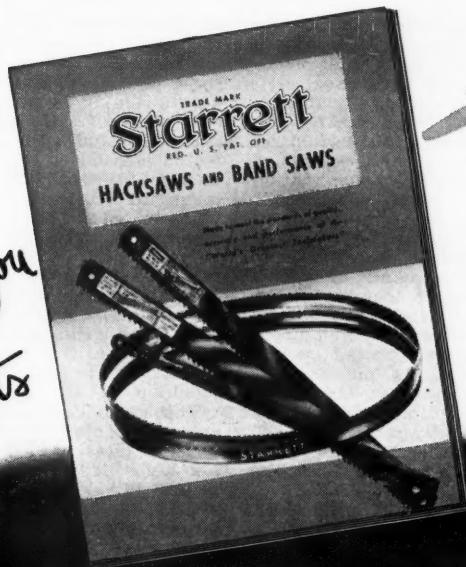
Dealer Territories Available

**ONONDAGA TOOL CORPORATION**

**FAYETTEVILLE  
NEW YORK**



To help you  
Cut  
Cutting Costs



Ask for this<sup>1</sup>  
Big, New { HACKSAW and  
BAND SAW BOOK



Ask your Starrett Distributor for it. He'll reserve a special free copy for you, or mail the coupon today. If you use hacksaws or band saws, you'll find this data-packed book a practical up-to-the-minute guide to better, faster cutting at lower cost.

The L. S. STARRETT CO., Dept. "M.D."

Athol, Massachusetts, U. S. A.

Please rush my free copy STARRETT HACKSAW and  
BAND SAW BOOK. Thanks.

Name \_\_\_\_\_

Company \_\_\_\_\_

Position \_\_\_\_\_

Address \_\_\_\_\_

**STARRETT**

MECHANICS' HAND MEASURING TOOLS AND

Precision Instruments - Dial Indicators

Steel Tapes - Hacksaws and Band Saws

Precision Ground Flat Stock

Buy Through Your Distributor

loading mechanism, with a bridge type support carrying the work-holding fixture at the idle station. All drill guide bushings are mounted in the fixture.

Transferring of the work is effected hydraulically by means of a transfer bar with latch type fingers that retract on the return stroke of the bar. Location of the work for the first operating station is accomplished by a wedge type locator entering a cored opening in the side of the block. At this station two locating holes are drilled and reamed which are used as final locating points on subsequent operations. Rough location of the work at stations 3, 5, and 6 is made by locators entering the same cored opening, with final location effected on two reamed locating pins. As the work is transferred from station to station, it rides on spring mounted guide blocks which keep it snugly up against hardened guide bars. After final location, the cylinder block is locked up firmly against the guide bars.

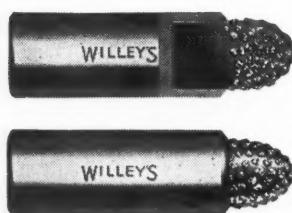
The entire cycle, including transfer, rough locate, final locate, clamp, drilling cycle of head, unclamp, and withdrawal of locators, is automatically performed after the block has been placed in the loading station and the cycle button

pressed by the machine operator. The hydraulic mechanism for operating the locators and clamps is situated at the front of each operating station. All hydraulic piping is exposed to provide for easy access to all joints. The center idle station includes a decelerating valve which is used to bring the transfer bar to a gentle stop. Also at the idle station is an air jet to blow chips from deep holes drilled at the first operating station. Provision is made for the easy removal of chips through chutes at the rear of the machine. The guide bars and all operating parts of the work-holding fixture are automatically lubricated by a Bijur system. Each drilling unit has a push-button control at the front of the work-holding fixture to assist in setting up the machine.

The sequence of operations performed on the machine are as follows: (station 1) load; (station 2) drill 9 holes (2 locating holes drilled and reamed); (station 3) drill 16 holes, chamfer 1 hole; (station 4) idle; (station 5) drill 27 holes; (station 6) counterbore 10 holes, chamfer 28 holes, ream 1 hole; (station 7) unload. The production rate of the machine is said to be approximately 72 pieces per hour at 100 per cent efficiency.

## USE WILLEY'S DIAMOND DRESSERS

**With WILLEY'S METAL SETTINGS  
and NATURAL WHOLE DIAMONDS**



Willey's Diamond Dressers can be adapted to all makes of grinders, for rough, semi-finish and finished dressing, for grinding hardened parts requiring a precision ground finish.

A trial will convince you there is no wheel dressing tool on the market, costing two or three times the price, that will equal its performance and cost per dressing.

**WRITE FOR CATALOG 42 — Illustrates complete line of Willey's Diamond Tools and Mechanical Dressers.**

No.	Usable Contents of the Diamonds		QUANTITY PRICES				Wheel Diameter
	Diameter	Length	1-25	26-50	51-75	76-100	
W-3	5/16	5/16	\$11.00	\$10.00	\$ 9.00	\$ 8.00	6 to 12
W-4	11/32	3/8	13.00	12.00	11.00	10.00	12 to 20
W-5	3/8	13/32	15.00	14.00	13.00	12.00	20 to 24
W-6	7/16	7/16	17.00	16.00	15.00	14.00	24 to 42

## WILLEY'S CARBIDE TOOL CO.

SOLE MAKERS OF WILLEY'S METAL

1342 W. Vernor Highway

Detroit 1, Michigan

Write on your letterhead for  
**FULFLO MECHANICAL DATA BOOK**

# *Cash in on these—*

## **More Efficiency • More Economy**



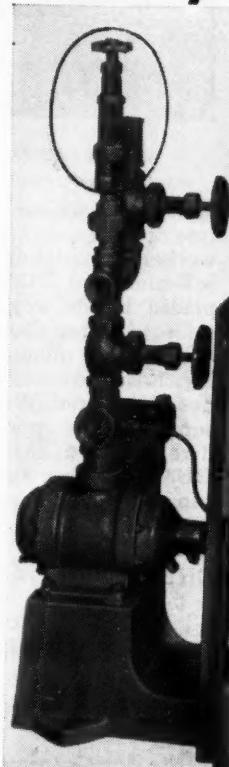
### **VALVES**

### **BY-PASS OIL-RELIEF**

IT'S always the right time to improve plant operation and functional efficiency of your equipment. NOW install these NON-CHATTERING valves . . . 5 springs for pressures from 5 to 300 lbs. pressure.

### **NO MAINTENANCE AFTER INSTALLATION**

Photo shows Fulflo relief valves in oil spray systems built by The Brown-Fayro Co., Johnstown, Pa.

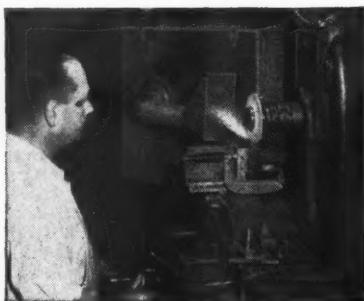


THE



**Specialties Co., Inc.**  
BLANCHESTER, OHIO

# **STOP THAT DUST with DUSTKOP**



**MODEL 420 ILLUSTRATED**

■ Keep machines and workers free of costly, abrasive dusts. Stop worker's complaints. The portable, self-contained DUSTKOP can be placed beside any machine and relocated later. Can usually be in operation 20 minutes after uncrating. Easily connected with metal hose or pipe. With a cyclone separator and spun glass filter, a direct-driven, self-clearing fan, DUSTKOP has the high suction capacity to give you **TOP PERFORMANCE**.

## **CHECK THESE ADVANTAGES:**

- DUCTLESS installation**
- Operates only when needed**
- Low maintenance**
- Firesafe construction**

**Write for Catalog A-415 NOW**

**AGET-DETROIT CO.**

**207 Main at Washington  
Ann Arbor, Michigan**

## **Chicago Model No. 131 Steel Press Brake**

Built to perform accurate work and supplement larger machines for all work within its rated capacity, the Chicago Model No. 131 Steel Press Brake illustrated herewith has been brought out by the Dreis & Krump Manufacturing Co., 747th St. and Loomis Blvd., Chicago 36, Ill. Said to be particularly useful in the quick and accurate manufacture of light sheet metal parts and products, the ma-



**Chicago Model No. 131 Steel Press Brake**

chine utilizes dies of the same standard type employed on all press brakes, and all operations of the unit are performed the same as on larger machines.

Features of the Chicago Model No. 131 Steel Press Brake include a smooth operating friction clutch and vari-speed drive. The all-steel construction and all-steel enclosed gearing of the machine are said to provide for safe operation. Standard equipment includes a lower die holder, vari-speed drive, back gauge, and motor and control for 2 or 3-phase, 50 or 60-cycle, 220 or 440-volt current. Dies and a front operated micrometer back gauge can be furnished as extra equipment.

Specifications of the Chicago Model No.

TOUGHNESS  
LONG LIFE  
POWER

PROTECTION  
DURABILITY  
BALANCE



*C/R Hammers have  
malleable iron heads  
with replaceable  
coiled rawhide faces.*

**RAWHIDE** is tops for  
'soft' mallets and hammers. And  
you can't beat *Chicago Rawhide*.  
Tightly coiled, specially treated C/R  
surfaces won't split, crumble or mush-  
room. They absorb shock, deliver  
powerful blows, protect delicate sur-  
faces, and stand up under tough use.

Always ask for *Chicago Rawhide*.

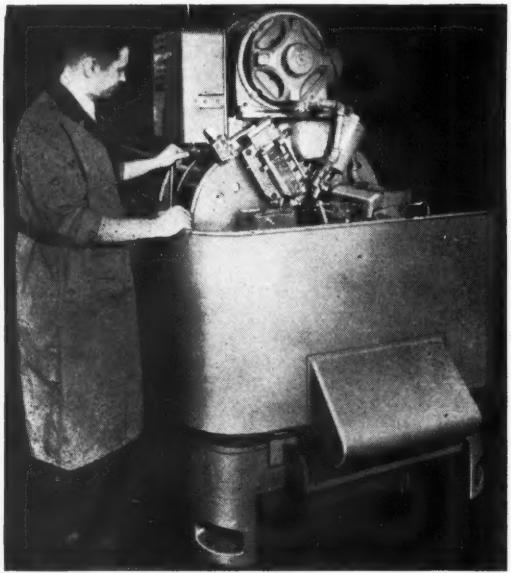


**CHICAGO Rawhide MFG.CO.**

1207 ELSTON AVENUE

CHICAGO 22, ILLINOIS

Other C/R maintenance products are: round, flat and twist belting; bolt pins and bolt lacings; gears, pinions and gear blanks; aprons and hand leathers; hydraulic packings.



Acme-Gridley Model SST Single Spindle Automatic

where simple operations such as turning, forming, straight, or taper boring, and cut-off are required in mass quantities has been placed on the market by The National Acme Co., 170 E. 131st St., Cleveland 8, Ohio. According to the manufacturer, the machine provides advantages of simplicity in construction combined with strength and stability suited to the application of high speed or carbide-tipped tools for high precision tolerances at unusually high output rates.

The heavy work spindle is supported in a double anti-friction bearing at each end and is direct driven by means of sheaves, V-belt connected to the motor. By changing sheaves, spindle speeds from direct down to 900 r.p.m. can be obtained with a 1,800 r.p.m. motor; with a 1,200 r.p.m. motor, down to 600 r.p.m.

The forming slide is an angular type, supported well back into the heavy flame column. The end working slide is a combination type from which straight or taper boring and outside radial turning can be performed simultaneously. The turning slide is equipped with a relieving cam to avoid any tool drag on the work as the slide recedes. The cut-off slide is mounted on the face of the frame and is lever operated directly from the main cam shaft. The stock stop is connected to the cut-off slide so that when the latter recedes, the stock stop automatically slides into stock gaging position.

The feed mechanism which controls the cam shafts, drums, and cams operating the slides and stock feed stop is gear

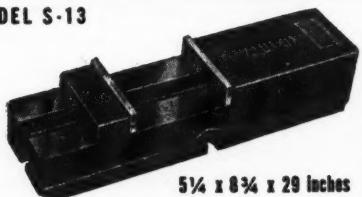
131 Steel Press Brake are as follows: capacity, 11 tons; working length, 48 inches; distance between housings, 31 inches; die space (stroke down, bed adjustment down), 6 inches above lower die holder and 7 $\frac{1}{2}$  inches above bed; adjustment of bed, 3 inches; stroke, 2 inches; strokes per minute, 25-60; motor,  $\frac{1}{2}$  h.p., 1,800 r.p.m.; and weight, 1,650 pounds.

#### Acme-Gridley Model SST Single Spindle Automatic

Designated as the Acme-Gridley Model SST, a single spindle automatic designed especially for making parts from tubing

**AIRLOX**  
PNEUMATIC and Hydraulic Vises  
Jaw force: 90 times air-line pressure  
Write for Data Sheet T  
**production devices, inc.**

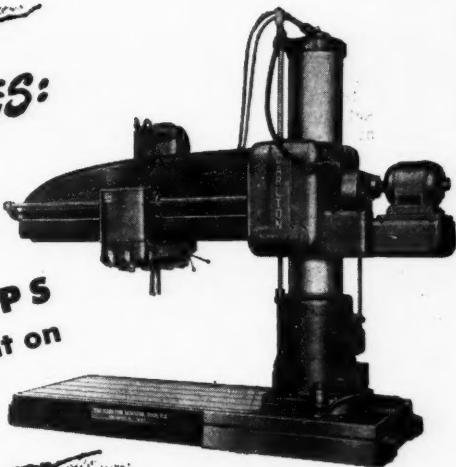
MODEL S-13



5 $\frac{1}{4}$  x 8 $\frac{3}{4}$  x 29 inches

Whitehall, New York

**CARLTON SUPPLIES:  
RUTHMAN  
GUSHER  
COOLANT PUMPS**  
as standard equipment on  
their radial drills.

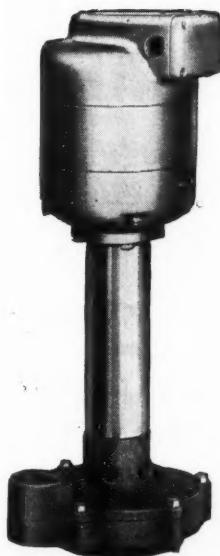


*Photo Courtesy  
The Carlton Machine Tool Co.  
Cincinnati, Ohio*

Yes, more and more of the leading machine tool manufacturers all over the country supply Ruthman Gusher Coolant Pumps as standard equipment on their machines. They have learned from experience that Ruthman Pumps give their customers long service, low maintenance costs and efficient operation at all times.

So follow the leaders in the industry, specify Ruthman Gusher Coolant Pumps on your metal-cutting machinery.

Illustrated above is a Carlton Radial Drill equipped with a Model UL Immersed type Gusher Coolant Pump.



**THE RUTHMAN MACHINERY CO.**

1817 Reading Road

Cincinnati 2, Ohio

driven from the main spindle. Feed control is effected through a standard disc clutch and lever. As a convenience and safety feature useful to the operator when setting up the machine, or in the event of a tool jam, a push button is provided which allows the operator to throw the feed lever to engage a reversing clutch which returns the slides to their retracted positions and frees the tools in a fraction of a second.

In the 2 and 3-inch capacity sizes, stock is fed by a cable, spring, and pusher bar which are always under tension so that the stock is fed the instant the collet opens. Each of these sizes is equipped with a standard stock feed mechanism for tubing lengths up to 16 feet. To conserve floor space and time in handling and loading stock, the Model SST is equipped with a stock tube which is made in half sections. The upper half of the tube is swung upward manually, allowing the stock to be rolled into the lower section, after which the upper section is manually closed and automatically locked. The stock pusher bar is not removed while loading, since it slides back automatically far enough to permit the stock to roll into the tube.

The stock feeding operating mechanism consists of a switch controlled reversing

motor-driven gear unit in connection with a cable and spring which return the stock pusher bar to its original position ready for the operator to load stock as soon as the last piece is fed. The motor is provided with a roller clutch and reduction unit which retard the force of the spring feed action so that the stock contacts the stop without shock. In sizes of the Model SST with capacities for tubing from 3 to 12 inches in diameter, an open type electric feeding device is employed.

### **Black & Decker No. 6 Universal Valve and Tool Grinder**

The Black & Decker Manufacturing Co., Towson 4, Md., announces the addition to its line of valve reconditioning equipment of a universal valve and tool grinder designated as the No. 6. The machine is also said to have many applications for production or machine shop tool grinding.

According to the manufacturer, the Black & Decker Universal Valve and Tool Grinder is designed to handle flat head and 15-degree valves quickly and easily without special attachments or difficult adjustments. The unit has a capacity for



**SAVE HANDS  
WITH STRANDS**

**Safeguards  
For Punch  
Presses**

**Send for Enclosure  
and  
Swoop Safeguard  
Circulars.**

**STRAND MFG. CO., INC.**  
**611 West Lake Street**  
**Chicago 6, Ill.**



**A Dumore\*** keeps your costs

# Well in Hand

often saving as much as  
twice its cost every day

A tool that pays for itself twice-over *every day* is a wise investment, isn't it? That's the kind of savings Dumore Handgrinders make at the Wisconsin Axle Division of Timken-Detroit Axle.

J. P. Schommer, purchasing agent, says they use about 30 Dumore No. 10's in their plant — burring and finishing gears. Production on one job (formerly done with a slip-stone) was increased 200%! They save enough in three weeks on this job alone to pay for every Dumore they use!

### You, too, can cut your costs with Dumore!

There are dozens of jobs in your shop for Dumore Handgrinders. And there's a Dumore that's right for each job! Choose the Dumore you need from the four different models at the left (a flexible shaft attachment fits the Duplex). Call your distributor today.

**FREE** Complete certified report on this Dumore job is yours for the asking!

Tear out this coupon and mail today!

The Dumore Company, Dept. K-33, Racine, Wis. B-1  
Yes, I'm interested in cutting costs and  
doing a better job!

**Check**

- Send me your certified report of Dumore grinding at Wisconsin Axle Division, Timken-Detroit Axle, Oshkosh, Wisconsin.  
 Send me your catalog.

Name \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ (\_\_\_\_\_) State \_\_\_\_\_

\*Trademark Reg. U. S. Pat. Off.

# DUMORE



RACINE, WISCONSIN

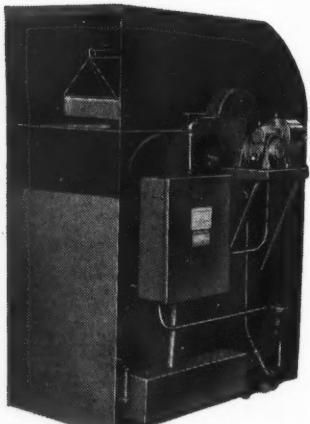
Sold by leading industrial distributors  
in all principal cities.

# PHILLIPS

## *Rotomatic Vapor Degreasers*

### CONVEYORIZED PERFORMANCE!

- Controlled cleaning Cycle!
- Open top degreaser cost!
- Timed for proper cleaning!
- 75% reclamation of solvent!
- Great economizer of labor!
- No installation costs!



ENGINEERED



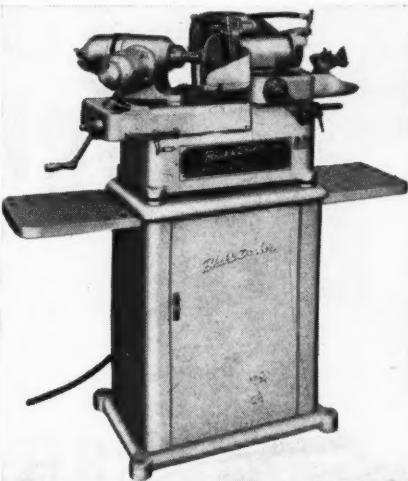
SERVICE

### PHILLSOLV...

the perfect cleaning solvent for all metals or combinations of metals. PHILLSOLV will not affect or stain highly polished surfaces. Send for FREE Booklet "Questions and Answers on Vapor Degreasing".

**PHILLIPS MANUFACTURING CO.**  
3455 Touhy Ave., Chicago 45, Ill.

valve stems ranging from  $\frac{1}{4}$  to  $1\frac{1}{4}$  inches and valve heads up to  $5\frac{1}{4}$  inches. Equipped with a double-end wheel spindle, the machine can be used in quickly grinding rocker arms, valve stems, and tappets with the aid of attachments which are standard equipment. Outstanding features of the machine include an air chuck which is designed to instantly grip or release the valve stem with the flick of a finger. The design also includes a controlled speed workhead motor which is quickly adjustable to accommodate large and small size valve heads. A



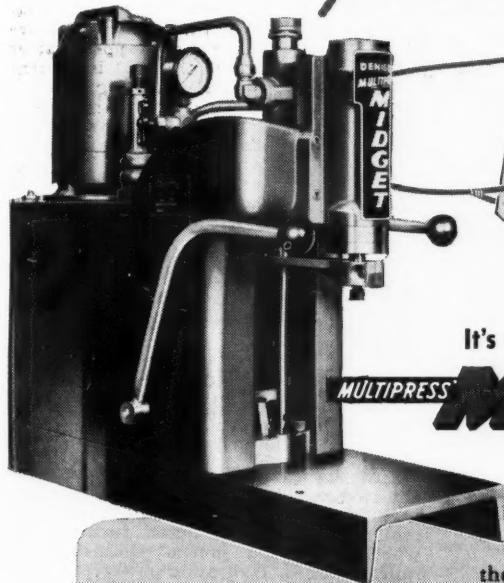
Black & Decker No. 6 Universal Valve and Tool Grinder

switch slide bar automatically controls the workhead motor so that the motor operates while the valve or tool is being ground and stops when the table moves away from the wheel.

Ruggedly built, the grinder incorporates a heavy gauge steel base of welded construction rubber mounted on a heavy duty steel cabinet, included as standard equipment. Cylindrical grinding and sharpening operations on cutters and reamers can be readily performed on the machine. If desired, the wheel head assembly can be removed and replaced with special grinding attachments such as an internal grinding attachment. The wheel head carriage is movable for grinding large diameter straight type tools such as reamers, circular punches, and dies. Standard equipment of the machine in-

Denison Announces a Complete

# Oil Hydraulic Press



It's the NEW PACKAGED UNIT

MULTIPRESS **MIDGET**

© 1948 U. S. PAT. OFF.

Now, for the first time, you can get a real MULTIPRESS, at a price comparable to other less versatile low tonnage equipment. Never before have the production-boosting, cost-cutting features of the MULTIPRESS been available in a 2000 lb. capacity press, *and at this low price.*

You'll get features in the new Midget which you can't get in any other type press. The oil-smooth hydraulic action exerts

the same exact, preset pressure on the work—regardless of part size variation. There is no dependence on operator skill or "feel," and unskilled operators turn out high, reject-free production. Ram stroke, speed and pressure are all easily adjusted by controls at the operator's fingertips.

If you're looking for all-around adaptability, increased production and reduced rejects—you'll want the MULTIPRESS Midget. Write for details and ask for Bulletin M-15A.



**DENISON**  
EQUIPMENT FOR APPLIED  
*HydroOILics*

THE DENISON ENGINEERING COMPANY  
1153 DUBLIN ROAD, COLUMBUS 16, OHIO

### Cross Special Tapping Machine



cludes five twin-grip collets; collet push rod and nose piece for small valves; rocker arm grinding attachment; diamond wheel dresser; cutter type wheel dresser; micrometer valve stem grinding attachment; and universal depth gage.

### Cross Special Tapping Machine

A special tapping machine which is designed to tap 60 holes in an automatic transmission case at the rate of 65 pieces hourly has been announced by the Cross

Co., Detroit 7, Mich. The work cycle is automatic and push-button controlled. When the button is pressed, 25 holes are tapped at Station One. An automatic shuttle then conveys the part to Station Two, where 35 more holes are tapped, after which the part is returned for unloading.

Each tapping spindle is equipped with an individual lead screw feed, with a safety device to eliminate tap breakage if holes have not been drilled in the previous operation, and with a lubricating system, which provides a measured amount of oil with every cycle.

### Morey Automatic Railroad Axle Lathe

Product of the Morey Machinery Co., Inc., 4-57 26th Ave., Astoria, New York 2, N. Y., the automatic railroad axle lathe shown herewith is a hydraulically operated electronically controlled machine tool for rough and finish turning the wheel seats and journal diameters of railroad axles. Hydraulic power provides for all chucking, clamping, feed, and traverse movements.

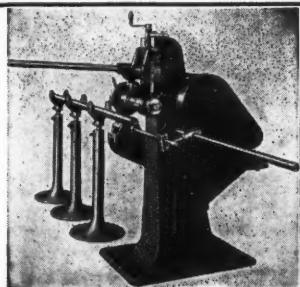
An end-drive chucking method is used to hold the axle by hydraulic pressure from the tailstock quill toward the headstock spindle, transmitting the power

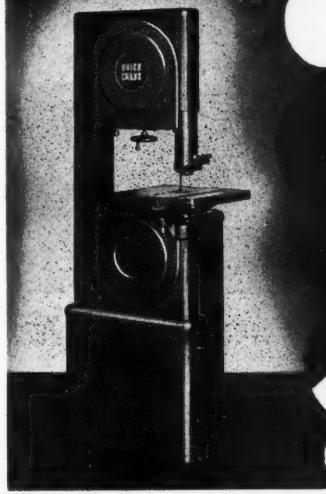
### FASTER TUBE AND PIPE CUTTING

**S**TEEN High-Speed pipe, tube and column cut-off machines embody unique design and rigid construction features to greatly step up cut-off operations. Available in three sizes to cut diameters  $\frac{1}{8}$ " to 3";  $\frac{1}{8}$ " to 6"; 3" to 12".

Write for Circular Today

**CONTINENTAL MACHINE CO.**  
1952 Maud Ave. • Chicago 14, Ill.





FOR EFFICIENT  
CUTTING OF ALL  
INDUSTRIAL MATERIALS

*Boice-Crane*

8-SPEED  
**GEAR DRIVE  
BAND SAW**

The Boice-Crane Metal Sawing Band Saw has 8 speeds . . . one to suit every kind of blade and to efficiently saw every kind of material. Available in bench and floor models. Strong, all-welded vibrationless steel frame.

The Boice-Crane 8-speed multiple purpose band saw is equipped with quick-change gear box and multi-groove pulley drive. An efficient speed is instantly available to the operator for cutting a wide range of industrial materials—iron and steel; brass and copper; aluminum and zinc; brake lining; plastics; building board; fiber and paper; wood and plywood. Also recommended for tool and die work. Our efficient blade butt-welder accessory makes it the equal (up to its capacity) of large die-shop band saws. Cuts up to 1" thick tool steel and softer materials proportionately thicker.

Precision-built gear box drive contains seven large anti-friction ball, needle, or roller bearings. Quick acting shift-lever and clutch disengages or engages gears. Precision-made helical gears are 1 $\frac{1}{8}$ " and 1 $\frac{1}{4}$ " wide and have

heavy 12-pitch teeth; transmit as much as one horse-power at lowest speed with a large margin of safety. All gears hardened and run in oil.

The gear-shift lever and V-belt are easily accessible for speed changing through a hinged, spring-latch door. Both oil-filler and oil-drain plugs also accessible through door of drive compartment.

The gear-box unit and motor are both housed entirely within the base cabinet and thereby efficiently sealed off from destructive dust and grit.

Throat Depth: 13 $\frac{1}{2}$ "

Clearance Under Guide: 8 $\frac{1}{2}$ "

Table: 15" x 15 $\frac{1}{2}$ ". Tilt: 45° right, 10° left.

Blades: 3/16" to  $\frac{3}{4}$ " wide.

Speeds: R.P.M.'s—1120, 890, 660, 450, 70, 50, 35,

25

Ft. per Min.—4100, 3260, 2420, 1650,  
 250, 183, 125, 192.

**FOR A GUARANTEE OF SATISFACTORY SERVICE**  
specify only the products of manufacturers who **SPECIALIZE** in producing  
power tools, rather than making them a sideline.

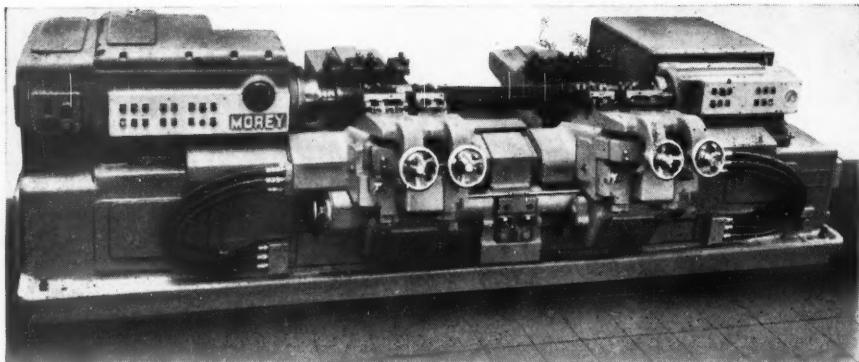
**WRITE FOR FREE LITERATURE**

**BOICE - CRANE COMPANY**

937 Central Avenue

Toledo 6, Ohio

DRILL PRESSES • JIG SAWS • BELT SANDERS  
SAW JOINTERS • THICKNESS PLANERS • LATHES • JOINTERS  
SPINDLE SANDERS • SPINDLE SHAPERS • TILTING ARBOR SAWS  
• BAND SAWS



Morey Automatic Railroad Axle Lathe

through wedge type buttons on the spindle flange. Both centers are of the floating type to automatically compensate for any variation of the center drill in the axle. The chucking pressure is adjustable to meet varying driving conditions up to a maximum of 50,000 lb., and the drive is safeguarded against pressure failure by the use of an electrical pressure switch.

The end-driving chucking method leaves center of machine free for the installation of an automatic loading device.

The unusual rigidity of the machine, which weighs 58,000 lb., enables multiple tooling to be efficiently used with tungsten-carbide tools and is said to assure vibration-free turning of very eccentric forgings. The main spindle drive, includ-

# Severance

**TUBING CUTTER GROUP - FOR FAST DEBURRING OF EVERY  
MACHINABLE TYPE TUBE ...**

<p><b>TUBE DEBURRING CUTTERS (Standard)</b></p>  <p>18 Standards in H.S.S. and Cemented Carbide</p> <p>— • — <b>ADJUSTABLE TYPE</b></p>  <p>Adjustable from 1/2" - 2-1/2" O.D. — for short runs</p>	<p><b>TUBE CHAMFERING MILLS</b></p>  <p>23 sizes from 3/16" - 2-1/2" O.D. — Chatterless</p>	<p><b>SOLID TUBE DEBURRING CUTTERS</b></p>  <p>16 sizes from 1/4" - 1-5/8" O.D. — H.S.S. and Carbide</p>
<p>From light hand-deburring up to close tolerance deburring, chamfering, flaring . . . For working non-ferrous metal, steel (including stainless) and plastic tubing . . . For combining reaming, sizing or flaring with end facing and deburring . . . Whatever the operation or material, Severance HSS and Cemented Carbide Tube Deburring Cutters are TOPS in performance — long life — economy.</p> <p>Write for Catalog No. 16</p>		

COMPLETE REGRINDING SERVICE BY NEW TOOL CRAFTSMEN SAVES YOU MONEY!

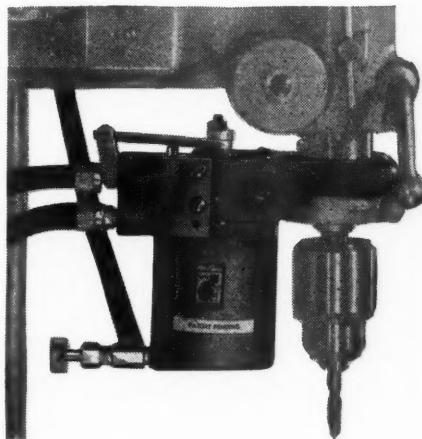
SEVERANCE TOOL INDUSTRIES INC.

724 Iowa Street • Saginaw, Mich.

# **Dual-purpose Pneumatic DRILL PRESS FEED**

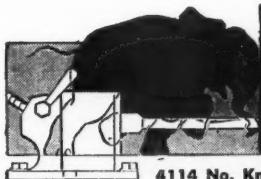
**for drilling, reaming, tapping, etc.**

This simple, inexpensive device quickly converts standard drill presses into semi-automatic machines — increases production, reduces operator fatigue, and does a more uniform job.



Clamps to spindle quill in a few seconds. Automatically closes air fixture on work. Adjustable feed control and break-through cushion. Quick return. Easy to synchronize with automatic cycle equipment.

*Air-Power does it quicker, cleaner, better.  
Write today for latest complete catalog.*

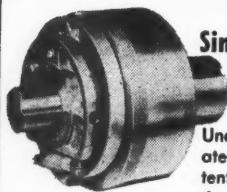


**MEAD**  
SPECIALTIES COMPANY

4114 No. Knox Avenue, Dept. AA-108, Chicago 41, Ill.

# HILLIARD CLUTCHES

for Industrial Equipment

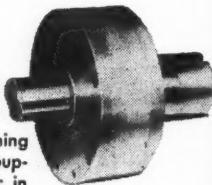


## HILLIARD Single Revolution Clutch

Unequalled for accurate control of intermittent machine operations. Gives closer tolerances to cut-off, stamping, shearing, and similar machines. Completely automatic with manual, electrical, or mechanical control.

## HILLIARD Over-Running Clutch

Hilliard Over-Running Clutches and Couplings are automatic in operation. They are unexcelled for automatic two-speed drives and stand-by drives. Excellent as fixed or infinitely adjustable ratchets.



## HILLIARD Slip Clutch

Reliable spring-loaded slip clutches and couplings available in a variety of types. Outstanding for preventing overloads; for reeling and winding operations; and for many other uses.



Write today —  
3 Hilliard Clutch  
Bulletins with design  
information.  
Free on request.

The HILLIARD Corporation

117 W. FOURTH ST. • ELMIRA, N. Y.

ing V-belts, clutch, gears, and anti-friction bearings, is designed to transmit 150 horsepower at continuous duty, allowing for momentary overloads up to 225 h.p. The complete machining cycle per axle requires between 2 and 3 minutes, depending on the size and operation, resulting in a production rate of 200 axles per 8-hour shift.

Close tolerances are said to be maintained on the finished axle due to the rigid design of all toolslides. The slides are hydraulically operated, with positive stops located inside the feed cylinders and equipped with a micrometer dial adjustment which changes the relation between cylinder and slide. An automatic compensating device consisting of a mechanical linkage with a lever ratio of 1:2 connects the tailstock quill to the carriages. This arrangement automatically provides for movement of all cutting tools during chucking to a symmetrical position in relation to the axle, with the result that the width of the end flanges on each axle is said to remain the same on both ends, regardless of the overall length which may vary on different axles.

For the finish turning operation, the machine is equipped with an automatic roller steady rest mounted on the rear carriages. The device turns the dust collars and supports the axle to assure the production of accurately straight journal and wheel seat diameters and to reduce the possibility of chatter marks.

Push button controls are provided for the automatic work cycle, as well as for all individual functions of each machine unit. Due to the length of the machine, the cycle control is duplicated on either end—headstock and tailstock. In addition to these two centralized control panels, the individual controls for each slide are mounted directly on the particular unit which they control so as to make the setup of the machine convenient for the operator. Six adjustable time delay relays are used in combination with limit switches and control relays for the correct sequence of operations.

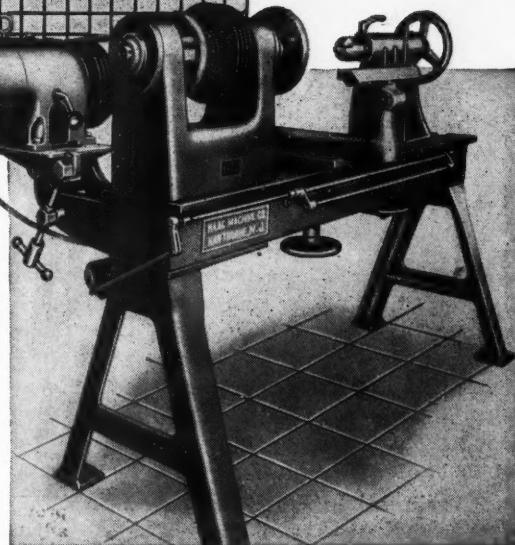
The extra heavy bed is carefully designed for the free flow of chips toward the rear of the machine to an automatic chip conveyor. The hardened and ground ways are covered for protection against scoring. All sliding and rotating surfaces are automatically lubricated from a centralized force-feed lubrication system with metered flow to all points.

Hydraulic manifolds with all connections drilled internally are used extensively to reduce the possibility of leakage to a minimum. Control valves are panel mounted to facilitate servicing.

# SPINNING Costs GO DOWN WITH THE SPIN MASTER

Type R-3, 3 h.p.,  
LIMA multi-speed  
GEARSHIFT DRIVE.

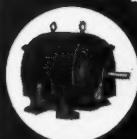
28 years of experience  
in engineering to meet  
the demand for superior  
Spinning Lathes, is in-  
corporated in the Spin  
Master, manufactured  
by Haag Machine Co.,  
Hawthorne, N. J.



## POWER COSTS GO DOWN with LIMA Gearshift Drives

Lima Gearshift Drives, originally introduced to modernize obsolete machines, have won nationwide acceptance by Original Equipment Manufacturers, as integral parts

of their products. Lima's dependable, low-cost reputation is the result of close cooperation between Lima Engineers and Users of Lima Drives. Write for Bulletin.



**THE LIMA ELECTRIC MOTOR CO.**

183 FINDLAY ROAD

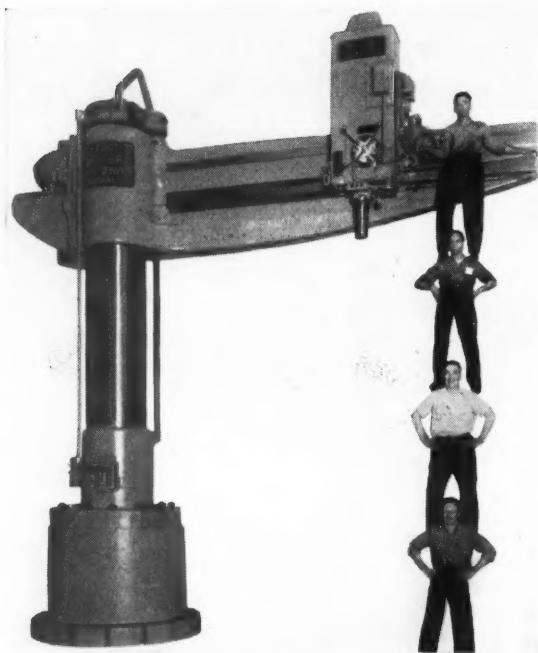
LIMA, OHIO

REPRESENTATION IN MOST PRINCIPAL CITIES

LIMA GEARSHIFT DRIVES

LIMA PEDESTAL GRINDERS - LIMA ELECTRIC MOTORS





Cincinnati Bickford Improved 12-Foot Master "Super Service" Radial

chine has a 22-foot overall height and a 14½-foot maximum clearance from the floor to the spindle, which permits work of approximately this maximum height to be handled.

### Snyder Special Drilling and Boring Machine

A machine which is designed to drill and line bore cross shaft holes in 70 different sizes and types of clutch housings has been produced by the Snyder Tool & Engineering Co., E. Lafayette, Detroit, Mich. The workpiece is manually clamped in each of two stations on a manually rotated Snyder standard index table which is mounted centrally between the machine slides. The two stations permit drilling and boring operations to be per-

formed simultaneously. The fixtures are provided with vertical slide in-and-out adjustment. Necessary locating holes are also provided for all part locating pins required for the complete range of work-pieces.

Four hydraulically actuated Snyder standard slide units are mounted on the machine horizontally and opposed in pairs, front and rear. The slides operate on hardened and ground ways, one flat and one V-type way. The two rear slides are equipped with single spindle drill heads and are used to drill the cross

### Cincinnati Bickford Improved 12-Foot Master "Super Service" Radial

Said to have a far greater capacity for the size of work that may be processed underneath it, the Cincinnati Bickford Improved 12-Foot Master "Super Service" Radial shown in the accompanying illustration has been brought out by The Cincinnati Bickford Tool Co., Oakley, Cincinnati 9, Ohio.

According to the manufacturer, the ma-

### TO INCREASE PRODUCTION AND TO IMPROVE EFFICIENCY USE BUTTERFLY FILING AND DIE MAKING MACHINES

This is a powerful machine for heavy or small precision work in use all over the world: Airplane Factories, Ammunition Plants, Toolrooms where fast production is desired. 4 Models, No. 16, No. 14 "EL" and Model "D." The larger the Model, the bigger the stroke and therefore more filing is performed. Furnished with or without pedestals. Constructed as per specification of U. S. Naval Aircraft Factories.

**HARVEY MFG. CORP.**

161 Grand St., New York,

Phone Canal 6-5170

**BEWARE OF IMITATIONS**

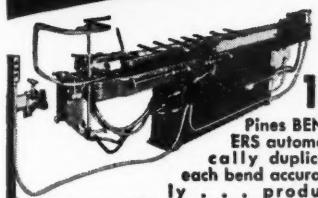


Our machine carries the *Butterfly* trade mark.

Registered  
U.S. Patent  
Office

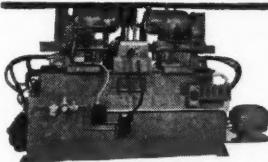
# How To Obtain

Higher Production and Lower Costs . . .  
on Pipe and Tube Fabrication



1.

Pines BENDERS automatically duplicate each bend accurately . . . produce up to 800 bends per hour to desired angle . . . capacities up to 6" extra heavy pipe . . . also ideal for square tubing, bar and rod stock, angle iron and extruded moulding shapes.



2.

Pines PROFILERS for end-turning, boring, chamfering, threading, tapping, burring, etc. . . . single or double spindle operation . . . fully automatic models with feed and discharge conveyors . . . fastest known automatic method of chamfering screw machine stock.

3.



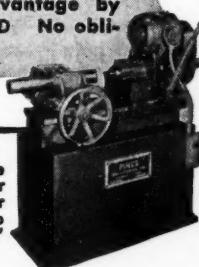
Pines fully automatic CUT-OFF machines produce up to 1500 pieces per hour . . . quickly interchangeable tools, either parting tool bits or rotary cut-off discs . . . capacity from  $\frac{1}{2}$ " to  $2\frac{1}{8}$ " O.D.

## Pines Extremely Versatile Units Cut Machining and Handling Time

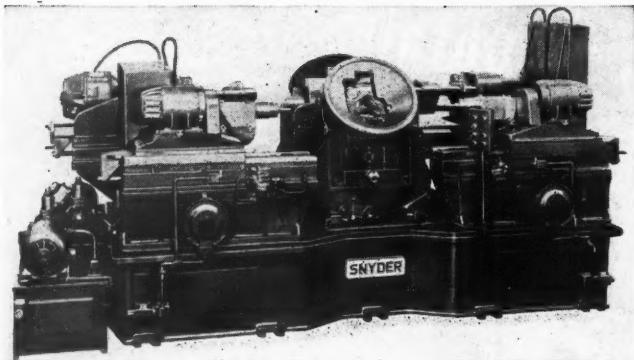
These four outstanding Pines machines accomplish worthwhile savings in time and money . . . and offer the ideal method on a wide variety of pipe and tube work. Pines engineers will recommend the proper size and type of Pines machines for your specific pipe and tube fabricating jobs. Today . . . write for this free consultation service.

FREE . . . You can obtain more comprehensive information on how you can use Pines pipe and tube fabricating machines to advantage by sending for Bulletin 102D. No obligation.

4. Pines CENTERING machine establishes end center holes in either round or square stock . . . simple to operate . . . handles up to 5" diameter stock.



**PINES** ENGINEERING CO., Inc.  
Specialists in Tube Fabricating Equipment  
642 WALNUT AURORA, ILLINOIS



Snyder Special Drill-ing and Boring Machine

shaft holes. The two front slides are equipped with Parker boring spindles for finish line boring the holes, and are provided with micrometer adjustment to permit precision setting of the finish boring tools, which are of tungsten carbide. The drilling and boring spindles are driven by a Reliance "V-S" drive which permits the spindle r.p.m. to be changed to suit the size of tools being used.

The slides of the machine are lubri-

cated from a pump and tank unit mounted at one end of the machine. Slide feed rates are controlled by individual feed control valves. The machine, which has an estimated production of 65 pieces an hour at 80 per cent efficiency, requires a floor space of 175 x 75 inches and is designed for efficient operation by unskilled workers.

### Fulmer Model 412 Hydraulic Honing Machine

A small size single-spindle hydraulic honing machine designated as the Model 412 has been added to the line of vertical

## SPEED for SMALL PART ASSEMBLY

FLOORS slope to feed parts to front—end reaching and fumbling.

Bins taper toward front to form convenient semicircle—keep all bins within easy reach.

Stacking, locking construction for rigid set-ups, easily changed when necessary.

All-welded construction. Smooth, folded edges.

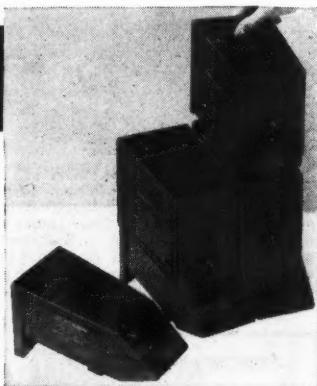
New design, adjustable hoppers provide increased capacity and permit regulated flow of parts according to sizes and weights.

Two sizes—tapered or straight sides.

#### IMMEDIATE DELIVERY

Write Stackbin Corporation, 1083 Main St., Pawtucket, R. I.

Manufactured and sold in Canada exclusively by Wickware-Stackbin, Ltd., Ottawa



# STACKBIN

"Stacked and



# SYSTEM

Still Accessible!"

**Jump  
Unnecessary  
Operations!**

Do Your

**BURRING • FINISHING • POLISHING**

*In One Operation*

with RUBBER-CUSHIONED

**Brightboy**



Try this real money-saving slant on finishing! The perfectly balanced rubber and abrasive in Brightboy do the job in one operation, eliminating in-between production steps. Adaptable, versatile Brightboy achieves a wide variety of both conventional and special finishes; often serves as the final polish; works to precision tolerances; shapes to contours. It doesn't load, gum or fill. And no time-taking preparation or dressing of Brightboy wheels is required before the job is run.

**YOUR MOVE! SAVE MONEY!** Get Brightboy prices and the catalog-manual from your distributor. Write the Brightboy Service Department for help on tricky production problems or for time-saving, new-methods suggestions.



**WHEELS • BLOCKS • STICKS • RODS**  
for manual and machine operations

**BRIGHTBOY INDUSTRIAL DIVISION**  
Weldon Roberts Rubber Co. • Newark 7, N. J.





"Where can I get the right motor for this special job?"

"Cleveland Electric Motor has it...or will make it for you!"

*There's a  
CLEVELAND ELECTRIC MOTOR  
for your every power need*

That's right! We specialize in furnishing motors with special mechanical or electrical specifications: flange-mounted, motors with mounted brakes and motors for operation on odd cycles or voltages. Also standard squirrel cage motors, slip-ring motors, or multi-speed motors for crane, hoist and general purpose applications. These motors are available in either open, enclosed or enclosed fan-cooled frames. All are specially engineered to meet your exact electrical and mechanical requirements.

So whatever your electric power needs—standard or special, large or small—there's a Cleveland Electric Motor that will do the job. Write today for our new price lists.

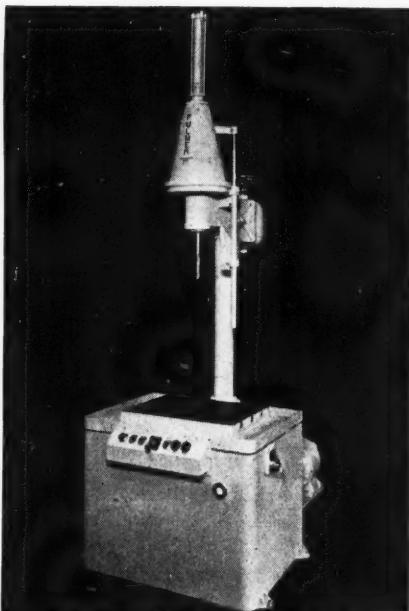


SPECIAL MOTORS  
FOR SPECIAL PURPOSES

CLEVELAND ELECTRIC MOTOR CO.  
5219 CHESTER AVE. • CLEVELAND 3, OHIO

hydraulic honing machines produced by the C. Allen Fulmer Co., First National Bank Bldg., Cincinnati 2, Ohio. The machine is designed for the rapid, accurate honing of any type of internal cylinder ranging from  $\frac{1}{2}$  to 4 inches in diameter, such as aircraft and automotive cylinders, sleeves, refrigerator and compressor cylinders, connecting rod bores, bushings, bearing housings, drill bushings, ball bearing races, air and hydraulic cylinders, and so on.

The Model 412 has a maximum honing



Fulmer Model 412 Hydraulic Honing Machine

stroke of 12 inches. Reciprocation is effected by means of a hydraulic cylinder, allowing any reciprocating speed from 0 to 80 f.p.m. regardless of the length of stroke setting. The reciprocating speed is said to be constant through the entire stroke at whatever speed has been set. Reversals at each end of the stroke are smooth and shockless, and the reciprocating mass is hydraulically counterbalanced. Hydraulic power is supplied by a Vickers vane pump driven by a 3 h.p. motor. The use of oversize hydraulic lines and a more than adequate hydraulic reservoir provides for high efficiency of the system.

**More Pieces per Grind!  
More Pieces per Hour!**



**WHEN YOUR H.S.S. TOOLS AND FORM CUTTERS  
ARE HARDENED THE **SENTRY WAY****

Sentry High Speed Steel Hardening Furnaces employing Sentry Diamond Blocks give full hardness to molybdenum, tungsten and cobalt high speed steel cutting tools and high resistance to wear and breakage because the neutral atmosphere produced permits thorough soaking at hardening temperatures without danger of surface oxidization or decarburization. Form cutters remain true to size and shape, no grinding necessary after hardening.

**WRITE FOR BULLETIN 1054-E9**

See you at the **METAL SHOW**, October 25-29.  
Visit our Booth 413 for a demonstration  
of the Sentry Furnace at work.



**The Sentry Company**  
FOXBORO, MASS., U. S. A.



The spindle of the Model 412 is driven by a separate 3 h.p. motor, so that an excess of power is available for any work within the capacity of the machine. The machine has three spindle speeds, obtained through the use of cone pulleys and a heavy duty V-belt, with the output pulley driving a set of alloy steel reduction gears which are mounted on oversize Timken bearings. The gears and bearings operate in a constant bath of oil with oil seal protection against the inclusion of foreign matter. Power is transmitted to the heat-treated alloy steel spindle through an aluminum bronze splined driver. The spindle is  $1\frac{1}{4}$  inches in diameter, splined, and has a No. 3 Morse taper in the nose to fit production type honing tools. Any conventional type honing tool can be used.

The working table is 18 x 24 inches in size, with T-slots for  $\frac{5}{8}$ -inch bolts, and is so placed that the machine can accommodate workpieces up to 21 inches in outside diameter. The worktable is located at waist height for maximum operator comfort.

Controls for starting, stopping, withdrawing the tools, short stroking, and other functional operations are all located on the front of the machine in the form of a push-button bank. Space is available

in the control bank to accommodate additional buttons for operating the patented Fulmer "Stop and Dwell" mechanism for honing blind holes or automatic fixtures in the event these items should be included on the basic machine.

Underneath the work table is a welded steel base which contains the electrical and hydraulic equipment. A compartment in the base houses the hydraulic reservoir, and in it is mounted the Vickers pump and filter, with the pump motor located at the rear of the machine. Another compartment in the base contains a 45-gallon coolant reservoir. The coolant is delivered to the work by a 1/10 h.p. Ruthman motor-driven coolant pump.

The Model 412 occupies 41 x 48 inches of floor space, is 100 inches in height, and weighs approximately 2,500 pounds.

### Brown & Sharpe No. 25 H.P. Milling Machine

Designed to provide an unusually great vertical capacity, a No. 50 milling machine standard taper hole in the spindle, suitable spindle speeds for large type cutters, and ample rigidity for using high power, a milling machine with extended

1 ton radial loads  
can't budge tools  
gripped in UNIVERSAL  
COLLET CHUCKS

UNIVERSAL ENGINEERING CO.  
FRANKENMUTH 9, MICHIGAN

# 25% Longer Wheel Life

using

**BARNESDRIL**  
**AUTOMATIC**  
**COOLANT**  
**SEPARATOR**

Example: Norton Grinder

Savings of 25% in wheel life at today's cost levels are a worthwhile investment on any production grinding operation. Add to this a saving of 10 hours a month machine down-time for cleaning and a real cut is made in production costs. These are actual results obtained when a

**BARNESDRIL** Automatic Coolant Separator was installed on a Norton Grinder, shown above.

Precision, highly finished surfaces are required on the job to meet inspection tolerances. Accumulated grit and fine chips cause the wheel to load up frequently, and often produce rejects due to scratches. Now, all abrasive particles and fine chips are continuously and automatically removed as the used coolant passes through the Separator. Finish is greatly improved, and the machine requires cleaning only once every six weeks.

**BARNESDRIL** Automatic Coolant Separators are available in capacities ranging from 5 to 100 gallons per minute. They automatically solve finish and clean-out problems in an easy and economical way. Why not ask your **BARNESDRIL** representative for a quotation today?

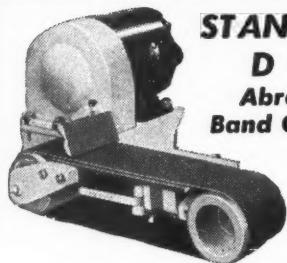
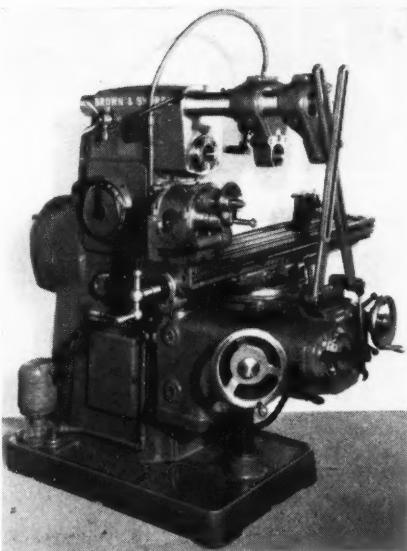
*Send for a copy of Bulletin B151E*

**B A R N E S D R I L L C O .**

260 CHESTNUT STREET ROCKFORD ILLINOIS U.S.A.

spindle face feature is now being offered in universal and plain types by the Brown & Sharpe Mfg. Co., Providence 1, Rhode Island.

Designated as the No. 2, the machine provides a full 5 h.p. all-gear drive to the cutter. The cutting feed and fast travel are independently all-gear driven by a  $\frac{1}{4}$  h.p. motor synchronized with the spindle motor. A fast travel of 75 inches per minute in all directions is available with the spindle rotating or stopped. A single lever is used to select any of the 18 spindle speeds from 30 to 1,200 r.p.m. Power is imparted to the spindle at all



**STANDARD**  
**D - 4**  
**Abrasive**  
**Band Grinder**

Famous  
for  
Stamina

This new, streamlined bench type grinder assures fast, quality finishing on metals, plastics, wood, fibre . . . at low cost. Built to machine tool specifications, Standard D-4 is equipped with improved band tension control and specially designed protective motor hood. 4x36 $\frac{1}{4}$ " band. The ideal portable unit.

OTHER STYLES AND SIZES IN NEW  
MANUAL ON FINISHING—WRITE TODAY

**WALLS SALES CORP.**

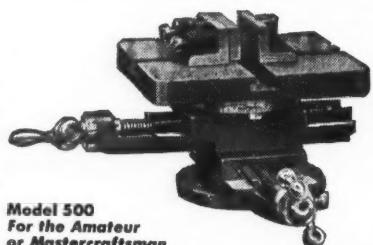
306 E. 38th St., New York 16, N.Y.

Brown & Sharpe No. 2 5 H.P. Universal Milling Machine

speeds directly back of the front bearing mounting. A single lever is also used to select any of the 18 cutting speeds in the range of  $\frac{1}{2}$  to 20 $\frac{1}{4}$  inches per minute, the speeds being uniform in all directions.

The coolant system is operated by a  $\frac{1}{4}$  h.p. motor-driven centrifugal pump which is arranged to automatically stop when the spindle stops and may be disconnected by a switch when not required. Fully automatic lubrication is provided for the column, knee, table, saddle, and slides.

According to the manufacturer, the extended spindle face design of the ma-



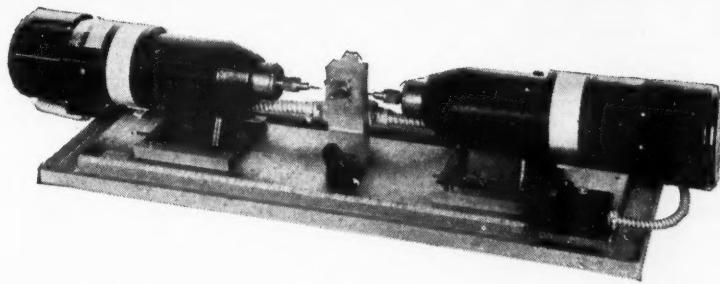
Model 500  
For the Amateur  
or Mastercraftsman

**MASTERCRAFT ROTARY TABLES**

The Mastercraft Drill Press and Milling Table conforms to the exacting standards of best machine tool construction. A great time saver. Cuts keyways, special shapes, splines and innumerable other forms, and drills on a dead straight line or on a radius.

Write for circulars describing this model and 600, 700 and 800 Series for heavier work.

**F & M SALES, INC.**  
1054 CAHUENGA BLVD.  
HOLLYWOOD 38 • CALIFORNIA



## Automatically Tapping Two Opposed Holes Simultaneously

**T**HIS 2-way bench fixture, which we recently designed and built, incorporates 2 Model "KT" Govro-Nelson Automatic Tapping Units which tap two opposed 8-32 holes simultaneously in a metal lamp part (shown on base).

When the part is located by the operator, it actuates a microswitch, causing both Units to tap simultaneously. Tapping time: One second. Output: As high as 1800 per hour, depending upon operator efficiency.

If you have similar operations, send samples and part prints and we shall be pleased to recommend the proper Automatic Units or quote on a complete set-up. Literature sent upon request.

**WRITE FOR  
Literature**

**GOVRO-NELSON CO.**

Machinists of Precision Parts  
for 25 Years

1933 Antoinette, Detroit 8, Mich.

*Automatic* DRILLING UNIT



## LEMPCO Pressurematic Press

...enables you to select the correct pressure for every job: press fitting, assembling, bending, straightening and die try-outs. Pressure builds from 0 to 60 tons in just four seconds. Movable head permits rapid centering of ram over work. Adjustable bolster accommodates large and small jobs. Strong, sturdy construction assures safety factors in excess of the limits of the press.

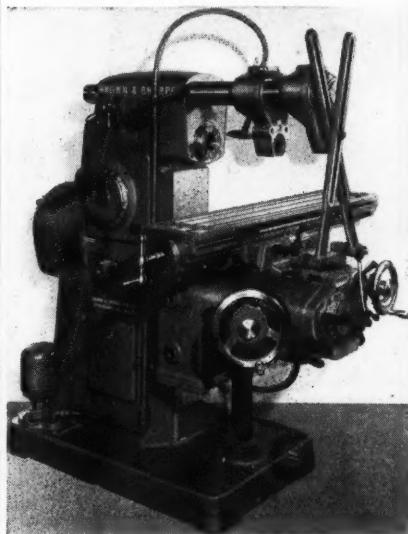
Lempco Pressurematic Presses are made in electric and hydraulic models, in 20, 40 and 60-ton capacities. Each will pay for itself many times over in your shop. Write for fully-illustrated catalog.



# LEMPCO

5756 DUNHAM ROAD • BEDFORD, OHIO

chine brings the front spindle bearing near the center of the table, reducing overarm and arbor lengths and providing for unusually rigid cutter support. The ability to mount cutters close to the spindle nose is said to reduce cutter and arbor vibration and cutter wear. The extra sturdy arbor support often permits the use of small arbors using small diameter cutters. When attachments are used on the extended spindle face of the machine, maximum rigidity is said to be obtained with no loss of throat distance.



Brown & Sharpe No. 2 5 H.P. Plain Milling Machine

In both the universal and plain types, the Brown & Sharpe No. 2 5 H.P. Milling Machine has a longitudinal feed of 28 inches, transverse feed of 10 inches, and vertical feed of 16½ inches. The universal type weighs approximately 4,700 lb., and the plain type, 4,400 pounds.

## H-P-M Cold Chamber Metal Die Casting Machine

The Hydraulic Press Manufacturing Co., Mount Gilead, Ohio, announces a large, self-contained, all hydraulic cold chamber machine for the production of die castings of aluminum, magnesium, and copper base alloys. Aluminum cast-

# from FLAT SURFACES



TO / INTRICATE  
SHAPES

with the New  
**DI-ACRO  
BRAKE**

- ROK-LOK—new sensitive material clamp increases accuracy
- DOUBLE-EDGED FORMING BLADE allows close reverse bends
- NEW PRECISION STOPS accurately control angularity of bends

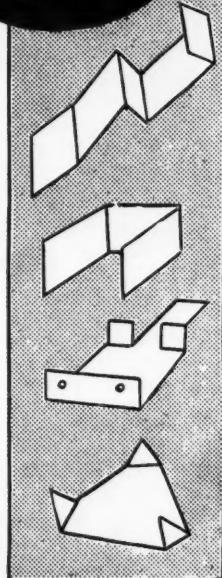
This versatile metal forming machine was developed for use in model shops, experimental laboratories and production departments where it often replaces dies for all types of precision forming operations. Di-Acro Brakes will form a great variety of materials including copper, bronze, stainless steel, aluminum and bi-metals.

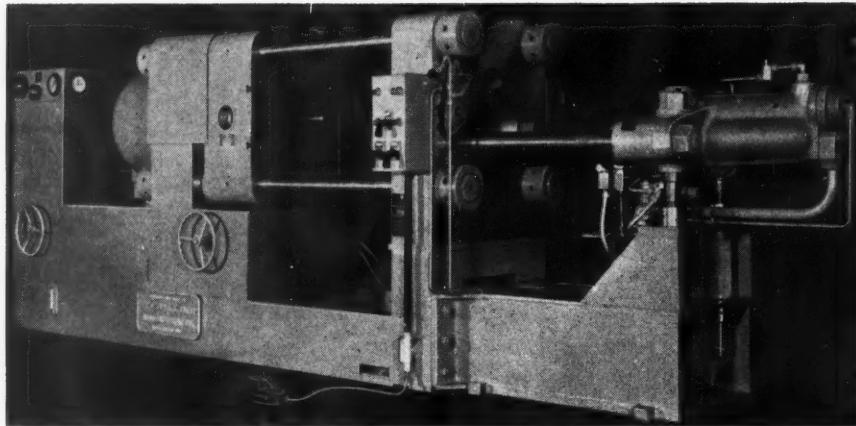
**WRITE FOR CATALOG.** New edition of 40-page Di-Acro Catalog contains detailed information on all Di-Acro Brakes, Shears, Benders, Notchers, Rod Parters, Punches and illustrates how these precision machines can be used individually or cooperatively for "DIE-LESS DUPLICATING."

← DI-ACRO is Pronounced "Die-Ack-Ro"

**O'NEIL-IRWIN mfg. co.**

306 8TH AVE., LAKE CITY, MINNESOTA





H-P-M Cold Chamber Metal Die Casting Machine

ings weighing up to 10 lb. each can be mass produced with the machine.

Some of the advantages and features incorporated in the machine which were not available in the preceding model are said to be as follows: (1) clearance is

provided below the die space mounting to accommodate core pulls attached to the bottom of the die; (2) this clearance also provides ample room for castings to drop from the die directly onto a conveyor or into a quenching tank, if desired;

## NEW DRILLS FROM OLD WITH NU-TANGS



Send us your old drills—we'll make them new again at fraction of the cost of a new drill! Exclusive NU-TANG® process replaces twisted or broken tangs with brand new tangs of correct size—and with GUARANTEED ORIGINAL STRENGTH. No welding—No distortion—No shortening of drills—No sleeves.

Any drill, reamer, or other tool with a Morse taper in sizes 2 to 6 can be repaired perfectly this quick new way. Delivery—One week. Used by many leading industrial plants. Amazingly low cost—satisfaction guaranteed! Send for complete information.

\*Patent Pending.

**NU-TANGS INC.** 1337 Bates Street  
Cincinnati 25, Ohio

write  
today

YESTERDAY'S PIONEER . . . TODAY'S LEADER



*Weldon*  
**Double-End End Mills**

**IT'S THE TEETH THAT TELL**

It's the "teeth" in Weldon End Mills that tell the story of more production and bigger profits on your jobs.

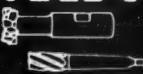
Weldon pioneered in producing scientifically designed teeth for end mills, a step over 25 years ago that opened the door to higher speeds, and faster feeds.

After lengthy experiment and study, the

tooth shape and spiral angle on Weldon End Mills were radically altered from conventional styles. The result was a tooth that allows chips to curl out without clogging and insures better performance and longer life for the tool.

Call the Weldon representative for more information.

**THE WELDON TOOL CO.**



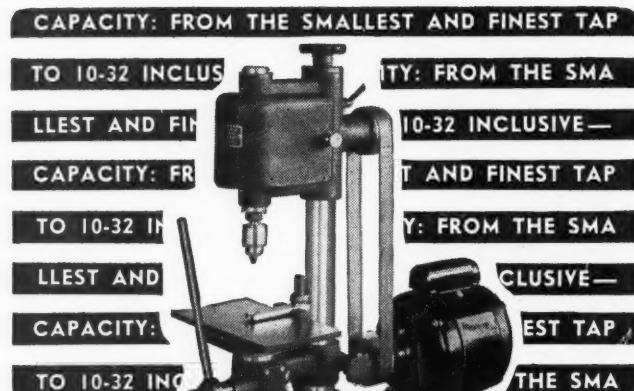
*Cleveland 4,  
Ohio*

3000 WOODHILL ROAD

(3) the adjustable vertical position of the injection assembly permits injection at either the center line of the machine or 6 inches below center, depending on the part and its gating; (4) injection speed has been doubled from 100 to 200 feet per minute without the use of additional motors; (5) all electrical controls and timers, with the exception of the operating switch panel, have been moved to the end of the machine to protect the controls from the heat and molten metal; (6) the hydraulic power unit and its reservoir for the hydraulic pressure medium are now mounted integral with the machine base

at one end of the machine, thus providing for a considerable saving in floor space and at the same time making the die space accessible from both the front and the rear; (7) new safety features have been added, including combination electric and hydraulic interlock controls which prevent the die clamp from accidentally closing due to electrical switch failure; and (8) handwheels are relocated in the front of the machine where they are readily accessible for adjusting die clamp and injection pressures.

The H-P-M hydraulic die clamp, consisting of a double acting ram equipped



When tapping operations must be precise, and the materials used differ in characteristics as widely as paper and monel, or ceramics and bronze; then the precision and instrument industries should specify, and demand, the

### HAMILTON SUPER SENSITIVE TAPPING MACHINE

Taps to the very bottom of blind holes. Reduces tap breakage to an absolute minimum. Built ruggedly . . . for fast and continuous service on tight production schedules.

**WRITE FOR BULLETIN T-47**



**THE  
Hamilton**

**TOOL COMPANY**

SUPER SENSITIVE DRILLING MACHINES  
TAPPING MACHINES - PORTELEVATORS

828 SO. NINTH STREET • HAMILTON • OHIO • U • S • A

with a small internal booster ram, closes rapidly and provides for positive clamping of the die halves to assure smooth, uniform castings with a minimum of flash and porosity. The die clamp is adjustable to any position within the limit of the clamp ram travel, thus permitting the shortest possible opening movement. The die opening and closing are free from shock, thus providing for long die life and a minimum of casting breakage, it is claimed.

The hydraulic injection unit consists of a double acting ram which actuates an injection plunger that delivers molten metal from the cold chamber into the die cavities. An automatic hydraulic ejector located in the movable die platen is said to provide for easy and shockless ejection.

Hydraulic power is available for actuating core pulls. Core movements are controlled by limit switches to

# NEW BENCHMASTER



**4 TON**  
punch  
press

Here's the press you need for punching large sheet steel and other stock in a jiffy. Its deep throat gives extra capacity—now enables punching to the center of a 17½" circle! Extra sturdy frame is heavily reinforced at all stress points. Press weighs 340 lbs.!

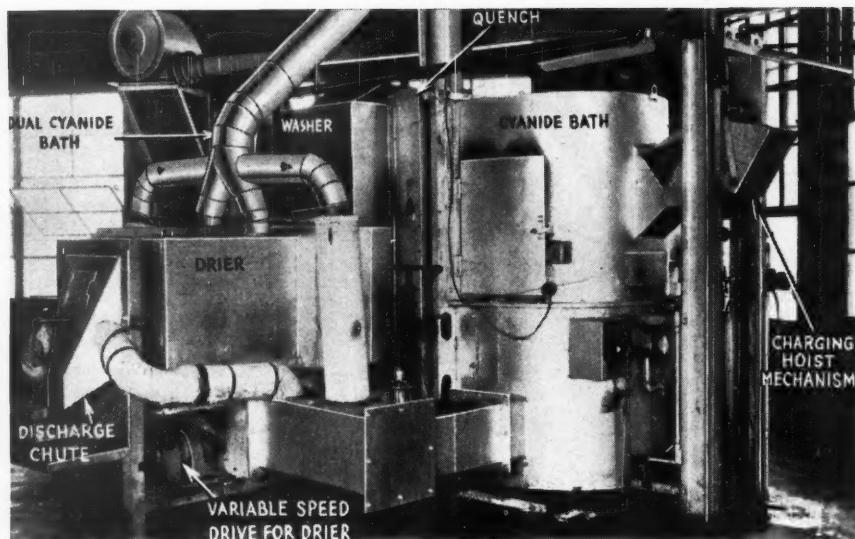
The new Benchmaster retains all the quality, engineering advantages and proven performance features of the standard model—yet gives you CAPACITY seldom encountered in larger presses! Available as a bench model or with legs as a standard extra. Write for MM bulletin giving complete details.

## benchmaster

WORLD'S LARGEST PRODUCER OF SMALL PUNCH PRESSES

MANUFACTURING COMPANY  
2952 WEST PICO BOULEVARD  
LOS ANGELES 6, CALIFORNIA





Dempsey Continuous Salt Bath Unit

assure maximum die protection. The die clamp cannot open until cores are pulled if the die requires this action sequence. The operator starts each cycle by turning the die clamp operating switch. After hand ladling the molten metal into the injection chamber, the injection cycle is started by operating a foot switch. The balance of the cycle is automatic, including "dwell" or chilling time, actuation of core pulling cylinders, die opening, and the ejection of the casting.

The H-P-M Cold Chamber Die Casting Machine has a maximum die clamping pressure capacity of 400 tons. The die platens are 38 x 38 inches in size. The

die space is 23 x 38 inches. The clearance between rods is 23 x 23 inches, and the daylight opening is 42 inches. Ram travel is 16 inches, with a shut height of 26 inches maximum.

### Dempsey Continuous Salt Bath Unit

Totally enclosed to protect the operator and to provide for comfortable, cool, safe, and clean working conditions, a continuous salt bath unit for cyanide hardening has been brought out by the Dempsey Industrial Furnace Corp., Dept. L, 133

### Producers of SCREW MACHINE PRODUCTS to specifications

We know our equipment.

Can we assist in designing your screw machine products for adaptation to our equipment?

Automatics— $2\frac{1}{2}$ " Rd. capacity, Turret Lathes—3" Rd. capacity. Castings and Forgings machined to a maximum diameter of 10", length 8", weight 15 lbs.

We are also equipped for Milling, Drilling, Threading and Tapping. May we quote?

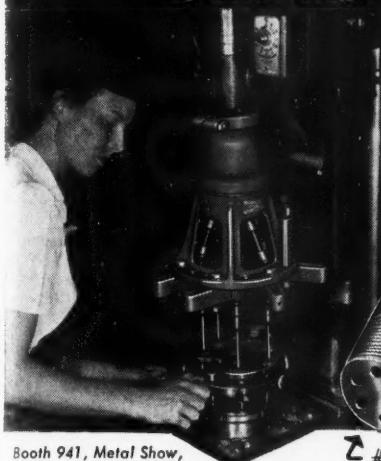
**SCREW MACHINE SPECIALTY CO.**

5637-43 Butler St.

Sterling 2235

Pittsburgh 1, Pa.

"This multiple drill head has increased our torch cone end production by about 600%."



Booth 941, Metal Show,  
Phila., Oct. 25-29

Drilling 6  
holes  $1\frac{1}{8}$ "  
deep—No.  
45 Drill, 28  
strokes in 1  
min. 10 sec.



When this **MULTI-DRILL** went into operation with a seven-station full automatic step drilling machine, welding torch cone end production at the Victor Equipment Co., manufacturers of gas welding and flame cutting equipment, went up "about 600%."

Why not see how your production can be increased with a **MULTI-DRILL**—the production drilling head designed for accurate high speed drilling? Available with 2 to 8 spindles; quickly and easily adjusted to any hole pattern on or within a 9" circle;  $\frac{1}{2}$ " min. center distances. Drill sizes  $1/32$ " to  $3/8$ ". *Special adaptations available.*

Write for details and name of your nearest Distributor

**COMMANDER MFG. CO.**  
4224 W. Kinzie Street • Chicago 24

Product of *Commander* — Builder of the *Commander Tapper*

# SHIM STOCK!

## READY FOR USE WITHOUT FUMBLING OR WASTE...

It's still in the package, still protected, still rolled ... but it's ready for instant use! Just pull the required amount of either brass or steel out of the package slot and snip it off. You're ready for the job!

No fumbling or spoilage with long strips or sheets of easily damaged thin gauge stock. No

problem of protecting your supply between jobs. Gauge plainly marked on container...no miking.



**Heavier gauges**, .015, .020, .025 and .032", are packed in envelopes containing four flat strips, each 6" x 25". LAMINUM (Reg. U. S. Pat. Off.), the laminated stock that simply p-e-e-l-s off to adjust the gauge, is sold in strips, 2" x 9".

Ask your industrial distributor about Laminated Shim's precision, packaged materials. He has special assortments, conveniently packaged to meet your special needs.

# LAMINATED SHIM COMPANY

INCORPORATED

GLENBROOK, CONNECTICUT

Main St., Springfield, Mass. All fumes are said to be efficiently carried off by stacks without entering the room.

Intended for use with neutral or cyanide type salts, the Dempsey Continuous Salt Bath Unit is claimed to be especially suited to the hardening of small parts such as screws, bolts, or other small screw machine parts of various shapes. Relatively small lots of different parts requiring varying cycles for proper hardening can be handled quickly and economically, it is stated. The unit consists of two pot type furnaces, a quench, washer, and drier. Automatic handling equipment, controlled manually, but hydraulically operated, loads the charge into the salt baths and transfers the work through the quench, washer, and drier, finally delivering the work clean and dry into a transfer box or other receiver without manual handling.

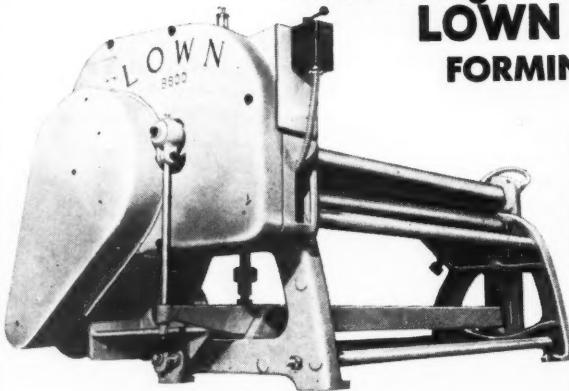
The unit has a capacity for charges ranging from 100 to 125 lb. The salt bath temperatures and heating cycle may be varied for each batch as required for best results. The furnaces can be designed to use any fuel—oil, gas, or electricity. When oil or gas is used, the spent flue gases are used to heat the drier. According to the manufacturer, the unit provides for a production of 300 to 500 lb.

of finished work per hour when cyanide hardening screws to a case depth of approximately 0.003 inch.

### Progressive Roller Head Seam Welder

A roller head seam welder is now being offered in three basic sizes—light, medium, and heavy duty—by the Progressive Welder Co., 3050 E. Outer Drive, Detroit 12, Mich. Each size is available in three types for circular welding, for longitudinal welding, or for both circular and longitudinal welding.

Outstanding features of the machine include the use of a head completely guided and aligned by four sets of anti-friction rollers to ensure that the welding wheels will follow up and down even extremely small deviations in material thickness and contour, thus making it possible to maintain constant weld pressures even where stock thickness varies along the seam. The rollers are matched in pairs, adjustable preloaded, and guide the head the full length of its vertical travel, riding on positive alignment V-guides on hardened and ground ways.



Model B-600 Series—6" diameter

### SAN ANGELO FOUNDRY & MACHINE COMPANY

SAN ANGELO, TEXAS

Distributors In Most Principal Cities

1000 E. UPTON

A new, improved, modern design, heavy duty machine, engineered for durability, strength, and service.

SELECT THE BEST . . .  
LOWN Slip Roll Forming Machines are versatile . . . dependable . . . easy to operate.

Write for bulletins!

LOWN Slip Roll Forming Machines are built in a range of sizes from which you can choose the exact unit for your requirements.

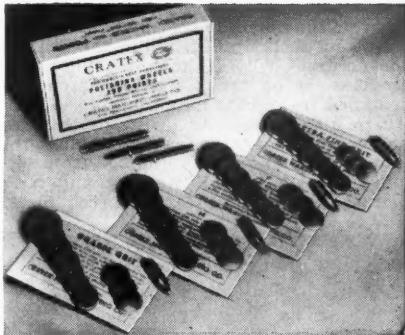


Illustration 1/5 actual size

## **C R A T E X**

### **Assortment No. 774**

### **44 Wheels and Points**

In various grits and standard sizes for clean  
ing and polishing, plus three mandrels.

**All for \$2.50**

**CRATEX MANUFACTURING CO.**  
97 Natoma St., San Francisco, Calif.

# G WILLIAM



### **TYPE GB GROOVED RACES**

### **BALL THRUST BEARINGS**

STANDARD SIZES OR SPECIAL DE-SIGN to your specifications; send sketch or worn sample, regardless of condition, for quotation, without obligation. • Our complete catalog will help you in making selection of bearings—shall we send it? Also ask for illustrated literature on Gwilliam ball thrust and roller thrust bearings.

**THE GWILLIAM CO.**

358 Furman St., Brooklyn 2, N. Y.

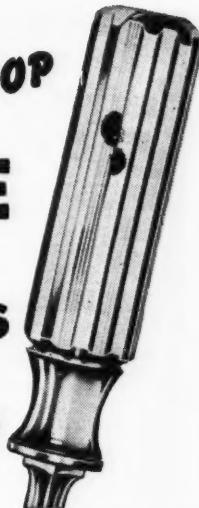
**NEW!**  
from TIP to TOP

# **WHALE**

**BRAND**

## **SCREW DRIVERS**

**AMAZING  
NOCOMBO  
HANDLE!**



A fine Tool now sensationaly improved to bring you greater working ease and power — AND Greater Safety! The new NOCOMBO Handle of extruded Ethyl Cellulose presents no more fire hazard than hard wood! It's stronger than any other plastic Tool Handle ever made! It won't bend when warm or shatter when cold, and it's a superior electrical insulator. The tough Chrome Vanadium Blade is forged in one piece in Round Shank or new Forsberg Reinforced Square Grooved Design . . . stronger than a square blade! Neither type can be turned in or driven into the handle! Your maintenance jobs will benefit by these outstanding features...order from your Jobber TODAY!

Send for the  
new Forsberg  
Catalog—your  
guide to greater  
working effi-  
ciency! WHALE  
Brand Screw  
Drivers, Hack  
Saw Blades, Coping  
Saw Frames &  
Blades, Band  
Saws, Breast  
Drills, Hand  
Drills.



**SENSATIONAL  
REINFORCED  
SQUARE GROOVED  
BLADE!**

**Forsberg**  
• MFG. CO., BRIDGEPORT, CONN., U.S.A.

**YOU'RE ALWAYS RIGHT  
WITH STAR**

**METAL CUTTING**

**Star**

From the start you'll notice how much faster Star Blades cut metals . . . and with a truer cut, that leaves a cleaner surface.

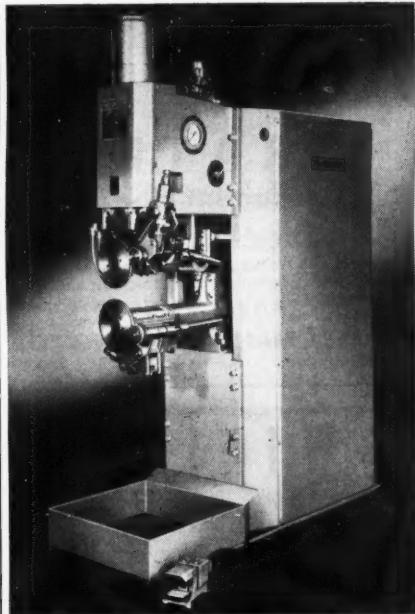
Tough, durable Star Blades lessen "time-outs" on the job, too. You see, every Star Blade is made of finest high-grade steel . . . precision-set teeth assure fast cutting and full side clearance. You'll appreciate the metal-cutting economies of Star Blades.

Your local jobber or distributor will be glad to help you choose a Star Blade to suit your job, ask him for the NEW Star Wall Chart for your shop . . . the Star Metal Cutting Booklet for pocket or tool kit—they both contain a world of useful information and are absolutely FREE.

**CLEMSON**  
**BROS., INC. • Middletown, N. Y.**  
Makers of hand and power hack saw blades, frames, metal cutting band saw blades and the Clemson Lawn Machine.

5208

According to the manufacturer, the front of the machine column is extremely rigid and well braced, while the rear of the column—where there are negligible stresses—is of fairly light construction designed to provide maximum accessibility to all components inside of the machine. Other machine features include the ability to change over quickly from circular to longitudinal welding and back again; provision of large throat clear-



Progressive Roller Head Seam Welder

ance to accommodate bulky work; transformer close coupled to the welding arms to reduce current loss; specially developed copper alloys to ensure maximum strength where strength is needed; maximum conductivity where this is important; transformer insulated with mica and fiber glass to withstand effectively the high temperatures sometimes developed in high duty cycle seam welding; triple independent water cooling systems with visible outlets; optional straddle or outboard mounted wheel locations; and several optional types of wheel drives.

Moreover, the machine features an exclusive wheel shaft bearing design which

is said to provide for even current transfer while also increasing bearing life and providing maximum facility for service and replacement when required. The right side of the machine is completely clear, permitting the mounting of any type of electric or electronic control units, while the left side comprises a large hinged door panel in which is mounted a recessed sub-panel containing all electric machine controls. All piping in the machine is extended to the outside of the column for simple installation, checking of connections, and moving of equipment. The motor drive unit for the wheels is removable as a complete unit for servicing if required. The entire head is accessible for adjustments, if required, by removing a sheet metal cover. A safety advantage is that drive shafts are non-magnetic and completely insulated. An adjustable-retractable stroke is provided on the machine to ensure minimum floor to floor time in the seam welding of parts.

The Progressive Roller Head Seam Welder may be used either for continuous, water or gas-tight seam welding or for roll-spot welding on cold rolled steel, stainless or other alloy steels, aluminum and other non-ferrous alloys, as well as various types of coated metals.

### Behr-Manning Resinall Metalite Cloth Grinding Belt

Resinall Metalite, a heat-resistant cloth type dry grinding belt, has been placed on the market by the Behr-Manning Corp., Troy, N. Y. Utilizing special heat-resistant thermosetting resin adhesives, the belt is said to remain sharp over unusually long periods of use. According to the manufacturer, substantial production increases both in number of pieces per man-hour and in number of pieces per belt have been repeatedly demonstrated on heat-generating operations.

### DoAll Utility Band Saw

A 16-inch basic band saw which can be readily converted to perform practically any sawing operation by the addition of accessories and refinements has been introduced by The DoAll Co., Des Plaines, Ill. The shell of the machine is pressed steel, completely enclosing all working parts. The frame is rigid, arc welded over die forms, and is integral with the shell structure. The motor and drive mechanism is isolated by a steel structure. A sawdust chute built into the machine is arranged for emptying from the front.

OIL HARDENING  
NON-DEFORMING

# Wa'rplis

DRILL RODS

● WARPLIS rods are accurate, truly round, highly polished pieces of top-quality oil hardening tool steel . . . readily machineable . . . free of surface decarb. For your fussy small tools and parts requiring plenty of hardness and toughness, with no appreciable warping or dimensional change.

Genuine WARPLIS oil hardening drill rods are obtainable from fine steel distributors and mill supply houses everywhere, same as our water hardening and high speed grades. Send for Pittsburgh's folder on drill rods.

PITTSBURGH TOOL STEEL WIRE CO.  
MONACA - PENNA.

(Left to Right) DoAll  
Models HS, HSV, LHV,  
and SFP Utility Band  
Saws



The DoAll Utility Band Saw has a throat depth of 16 inches, work thickness capacity of 12½ inches, and table size of 20 x 20 inches, with 45-deg. tilt right and 5-deg. tilt left. The drive wheels are bal-

anced cast aluminum, Neoprene tired, and operate on ball bearings. Access doors at both the front and back of the machine are arranged to swing open at a touch and snap shut. The saw blade tension indicator is calibrated for different saw widths, job selector dials on variable speed models correlate sawing factors to show the best sawing speed for each type and thickness of material being sawed.

The basic machine in the Utility series is the Model HS which has one high set speed or two 4-speed step pulley drive for

CASE REPORT No. 51 from a series of actual cases recording the successful application of BEAR DY-NAMIC BALANCING to Industry.

## 250 to 300 ROTORS per day DY-NAMICALLY BALANCED

—on Bear Balancing Machines at Pezzillo Pump Co. Benefits of Dy-Namic Balancing which they report, can be yours, too, when you use Bear Machines to balance rotating parts. Select the machine that fits your need, from the new Bear Dy-Namic Balancing Manual.



**FREE MANUAL tells how to  
BALANCE ALL ROTATING PARTS**

This new Dy-Namic Balancing Manual tells you how you can easily, quickly, economically balance rotors, armatures, crankshafts, and other rotating parts, weighing from 4 oz. to 8 tons. Also tells how Bear Dy-Namic Balancing Reduces Wear on Rotating Parts, Eliminates Noise and Vibration, Improves Efficiency of Finished Product. SEND FOR YOUR COPY, TODAY. Write Bear Mfg. Co., Dept. M-25, Rock Island, Illinois

2969

**BEAR STATIC AND DY-NAMIC  
BALANCING MACHINES**

Pezzillo Pump Co.  
Philadelphia, Pa.  
—reports greater quietness, smoothness of operation and better performance since balancing their rotors on Bear Machines. Approximately a minute and a half required for each rotor. They say Bear Balancing Machines are easy-to-operate, trouble-free, fast in production!





## New NESTING TYPE TOTE PANS

20" Long x 12"  
Wide x 6 $\frac{1}{4}$ " Deep  
16 Ga., drag holes,  
handles both ends.

J. L. LUCAS & SON, INC.  
BRIDGEPORT 5, CONN.

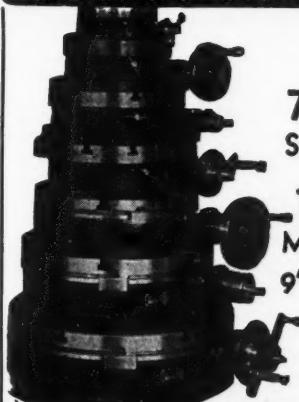


## PRESSES FEEDS AUTOMATIC EQUIPMENT

The V&O Press Company  
HUDSON, NEW YORK

SAVE \$

TOOL MAKERS' TIME  
T R O Y K E  
ROTARY TABLES



7  
SIZES

10  
MODELS  
9" to 25"



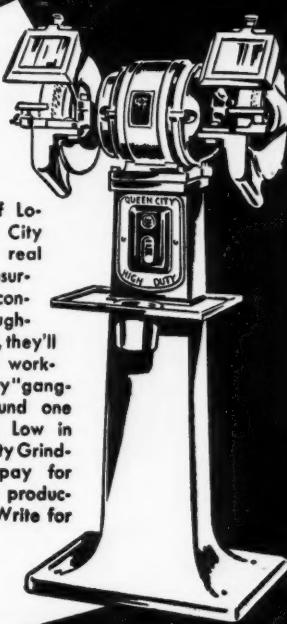
Catalog on request

TROYKE MFG. CO.

4422 Appleton St., Cincinnati 9, Ohio

## SAVE TIME, MONEY

with rugged  
**QUEEN CITY  
GRINDERS**



A battery of Lo-Cost Queen City Grinders is real production insurance. Placed conveniently throughout your plant, they'll stop wasted work-hours caused by "ganging up" around one lone grinder. Low in cost, Queen City Grinders quickly pay for themselves in production gained. Write for Catalog.

**QUEEN CITY  
MACHINE TOOL CO.**

233 E. 2nd St.,  
CINCINNATI 2, OHIO

cutting plastics, wood, and similar materials. The Model HSV has a variable speed range of 850 to 5,200 f.p.m. for the fast, accurate cutting of aluminum, sheet steel, and light structural forms. The Model LHV has both high and low variable speeds (50-300 and 850-5,200 f.p.m.) for cutting all ferrous as well as non-ferrous materials and alloys. The Model SFP has the same speed range as the Model LHV but includes equipment for filing and polishing operations, as well as the welding of saw bands.

To complete the standard equipment of the DoAll Utility Band Saw, rip fences

and circle cutting, mitering and contouring attachments are available which can be utilized to make the machine fit all job requirements. Specialized saw guides are available for such types of blades as precision, buttress, claw tooth, spiral, knife edge, and scallop. The machine can be equipped with either a  $\frac{1}{2}$  or  $\frac{3}{4}$  h.p. motor.

## Hamilton-Kruse No. 301 Blank Slitter

Designated as the Hamilton-Kruse No. 301, a duplex body blank slitter designed for plain iron or tin sheets having a maximum thickness of approximately 0.017 inch has been announced by the Lima-Hamilton Corp., 60 E. 42nd St., New York 17, N. Y. The operating speed of the machine is 50 sheets a minute or slower, depending upon requirements. Cutters supplied with the machine are of high-carbon high-chrome forged steel.

The slitter is designed to trim and slit sheets up to 36 inches square into strips on the first unit and then automatically trim and slit the strips into body blanks on the second unit. For cap stock and for blanking bodies of large size cans, the same basic machine, with a different feed arrangement, is said to trim sheets on the first unit and then trim or trim and slit them on the second unit. Sheets are fed from the first operation to the second on the same plane and are fully controlled by automatic hold-downs which are claimed to ensure accurate registry and minimum scrap. The slitter can be arranged for plain material or lithographed sheets, and can be hand fed or operated in conjunction with an automatic sheet feeder.

Floor space occupied by the machine measures 132 x 90 inches, front to back by right to left, including the grinding attachment. The approximate net weight

**Now! You Can Cut Internal Keyways on an Ordinary Drill Press Easily and Quickly with the VERSATACH**

FITS ANY STANDARD DRILL PRESS

**Also Does:**

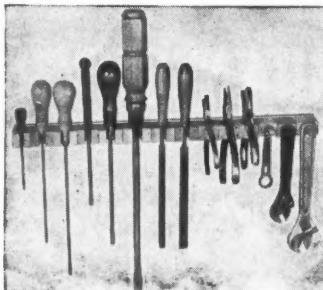
- Power Filing      • Sawing
- Form Filing      • Slotting
- And many other operations

Saws and Holders are available for \$1.75 each. Additional files in 1/8", 3/16", 1/4", 5/16", 3/8", 7/16" and 1/2" sizes. Available at \$1.75 each including Holders

Price Complete with One 3/16" File and Holder  
**\$29.75 POSTPAID**

If additional files are desired add \$1.75 for each file and holder. BE SURE TO FURNISH DIAMETER OF DRILL PRESS SPINDLE QUILL FULLY GUARANTEED.

If Your Local Dealer cannot Furnish the VERSATACH Write Directly to THE SENEWA COMPANY, Dept. D, P.O. Box 1111, Hutchinson, Kansas



## TOOLRAK Saves TIME AND TOOLS

Your workers always have the right tools at their fingertips when you equip your shop with Toolrak. Because the selected hardwood blocks are interchangeable in the extruded aluminum backstrips, you arrange them any way you want, rearrange as often as you wish. Get Toolrak in factory-assembled sets or buy individual blocks and strips to fit your special needs. Send for free folder.

**Set No. 8-7, 8" long, holds 7 tools, \$1.25**  
**Set No. 12-10, 12" long, holds 10 tools, \$1.90**

**Set No. 18-14, 18" long, holds 14 tools, \$2.55**

If your dealer or mill supply house can't supply you, order direct. Mail orders add 10¢ per set to cover packing and mailing.

**DAVIS DEVELOPMENT CO.** • 348-5 1st Nat'l Bldg.  
Colorado Springs, Colo.

## TOOL ROOM OPTICS

TROUBLE SEEING  
YOUR LAYOUTS?  
DIFFICULTY CENTERING  
THEM ACCURATELY?

### You Need **OPTI-LOCATOR!**

- Functions on any machine with cross-feed.
- Split - thousandth accuracy in 60 seconds.
- Convenient to use . . . cheap to buy.

Write to

**STERLING MFG. CO.**

Successors to The Benton Company

DEPT. M.,

COVINA, CALIFORNIA



# BAUMBACH

THE DIE SET  
AUTHORITY

'SURFACE GROUND  
TO ASSURE  
PARALLELISM AND  
HIGH FINISH'



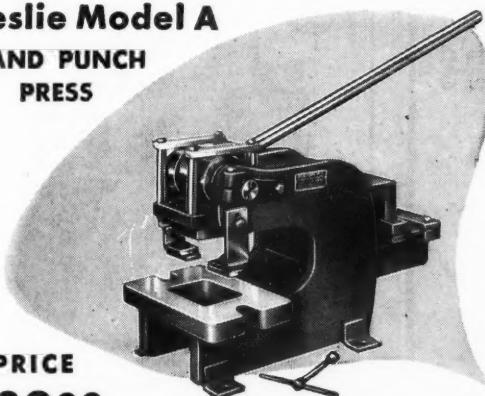
All Baumbach Die-Sets have demountable Leader Pins and Bushings. This exclusive feature permits removing Leader pins for machine work on the die shoe and assures reassembly without loss of alignment. A big time and trouble saver. Write for Catalog.

**E. A. BAUMBACH MFG. CO.**  
1806 S. KILBOURN AVE. CHICAGO 23, ILL.

## Leslie Model A

### HAND PUNCH

PRESS



PRICE  
**\$120.00**

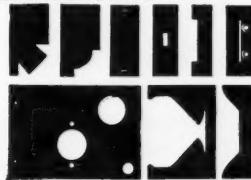
Eliminate Die Changes . . .  
On Short Runs

Dealer Inquiries Invited

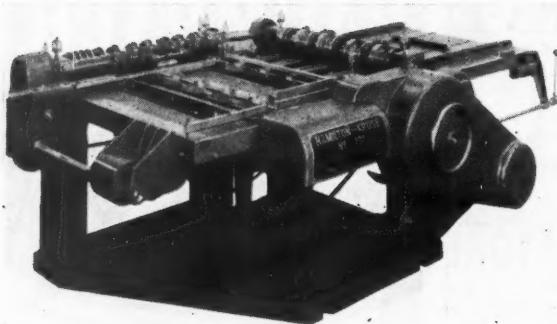
LESLIE WELDING CO., 2939 Carroll Ave., Chicago 12, Ill.

Large Punch Plate and Bed—6" throat—15 Ton Capacity — accuracy of leader pin die set—all found in the new **LESLIE** Model A Hand-Punch Press. Why change dies when this compact, easy operating press can take care of your short runs?

Write for complete information  
Diagram below illustrates versatility of the **LESLIE** press—each blanking done with one stroke.



Hamilton-Kruse No. 301  
Blank Slitter



of the machine, including the grinding attachment, is 7,270 lb. The unit measures approximately 40 inches high from the floor to the top of the feed table.

Both the first and second units are mounted on the same rigid well-reinforced base and are geared in unison. The 3 h.p. individual motor drive unit on the slitter is controlled by start-stop and jog buttons. Thrust ball bearings accommodate the end thrust on shafts, and the bearings themselves are provided with sight-feed oil lubrication.

Said to provide a desirable high power factor (95 per cent) at greatly reduced power demand, a resistance welder with three-phase balanced power, to be known as the "Tri-Phase", has been developed by the Taylor-Winfield Corp., Warren, Ohio. In correcting power supply difficulties the welder, it is claimed, provides advantages that are very desirable in resistance welding; namely, increased production or unusually heavy welding with present power installation, as well as the production of high quality welds. In addition, the welder is said to provide for reduced electrode wear and pickup, unusually close spot spacing, and minimum sensitivity to work thicknesses.

According to the manufacturer, the Tri-Phase welding circuit permits a wide

## Small Precision Pins

DOWEL - STRAIGHT  
COUNTERSUNK - TAPER

Made to Blueprint

Centerless Ground  
to  $\pm .0001$ " Accuracy

.030" to .125" Diam.  
.125" to 2" Length

Complete Centerless Service  
Since 1931

COMMERCIAL  
**CENTERLESS**  
GRINDING CO.  
6605 Cedar Ave., Phone EN 3412, CLEVELAND 3, O.

GRANT



RIVETERS



• Pioneers in the riveting field. Head rivets from smallest to  $\frac{1}{2}$ " diameter, either by noiseless spinning or vibrating hammer method.—Sizes to meet all needs.—Types include Vertical and Horizontal Multiple Spindles. Write for literature—and don't forget to send samples.

THE GRANT MFG. & MACHINE CO.  
96 Silliman Ave. Bridgeport 5, Conn.

## Quality Lathe Dogs

Heavy malleable iron. Tail fits face plate slot. Standard Dog has square head screw. Safety Dog has headless screw. Prices are for either style.



Capacity	Price*	Capacity	Price**
1/2"	\$0.85	3/8"	\$0.75
3/4"	1.00	1/2"	.80
1"	1.10	3/4"	.85
1-1/4"	1.25	1"	1.00
1-1/2"	1.30	1-1/4"	1.15
1-3/4"	1.35	1-1/2"	1.45
2"	1.40	1-3/4" or larger	
2-1/2"	2.20	2-1/2" and 10-inch	
3"	2.30	lathes. f.o.b. factory	
3-1/2"	3.15		

## SOUTH BEND LATHE WORKS

427A E. Madison St.  
South Bend 27, Indiana



## ATLANTIC For GEARS

Our service on small gears, due to new equipment recently installed, will interest you. Send samples or blueprints for quotation.

ATLANTIC GEAR WORKS, INC.  
198A Lafayette St., N. Y. 12, N. Y. CANal 6-1441

**M-B** MODEL UTR  
60,000 RPM

**"UTILITY" Pneumatic  
GRINDER**

A powerful tool, streamlined in design, easy to handle. Designed for real production work and the toughest jobs. Precision made. Speed such as to operate Tungsten Carbide Burrs, Rotary Files, etc., to their full efficiency. Special grease-sealed bearings. Fitted with steel housing, a special safety feature.

**WRITE FOR CIRCULAR**  
Representatives in Principal Cities

**M-B** PRODUCTION  
130-134 E. LARNED ST.  
DETROIT 26, MICHIGAN

You Asked For It . . .

**HERE IT IS!**

**VLIER**



**"SET  
YOUR  
OWN"**

**ADJUSTABLE**

Precision machined from properly hardened materials to give accurate life-time service.

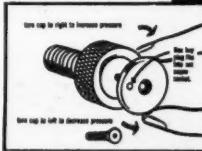
## TORQUE THUMB SCREW

### 5 TO 50 POUNDS END PRESSURE...

In response to industry's demand for a Torque Thumb Screw that will not only hold during machining, but one which tool engineers can set themselves, to meet the requirements of many jobs, the Vlier Adjustable Torque Thumb Screw, with its wide range of 5 to 50 lbs. end pressure, presents the greatest boon to economical production ever offered. Setting the Vlier Adjustable Torque Thumb Screw is simple. Once set, the pressure will remain constant under all working conditions, assuring accurate holding tension, avoiding work distortion, preventing costly rejects and expensive fixture rework costs.

A trial will convince you the Vlier Adjustable Torque Thumb Screw is a "must" in your tooling operations.

Adjustment is made by simply removing center head screw, allowing rotation of adjuster-cap, which turns hex key, regulating pressure.



A few choice territories available  
for representatives as special dis-  
tributors of the famous Vlier line.

Write today for detailed literature.



## VLIER MANUFACTURING CO.

Manufacturers of Production and Tool Specialties  
4552 BEVERLY BLVD., LOS ANGELES 4, CALIFORNIA

**COSTS STAY DOWN**

With

**VIMCO** *Light*



That's Why  
Ettco Tool Co.  
offers this  
Popular Light  
with Every  
Tapping Machine

Direct-on-the-spot light reduces costs, speeds work. Eyes thrive on it. Flexible arm with swivel joint puts light on any work area . . . holds it steady. Cost slight . . . results dependable. Write for folder No. 74.

**VIMCO MFG. CO.**

111 Brayton St.,  
Buffalo 13, N. Y.

**Heavy Duty • Bench Type**

### **ENGRAVING MACHINE**

Interchangeable heads for engraving, electrical marking, and acid etching . . . available for all models. Also Panto engraving cutters, cutter grinders, master copy type, endless belts and accessories.



Write for  
illustrated  
catalog

**The PANTO  
MODEL UE-3**

LIGHTER MODELS UE and UE-2

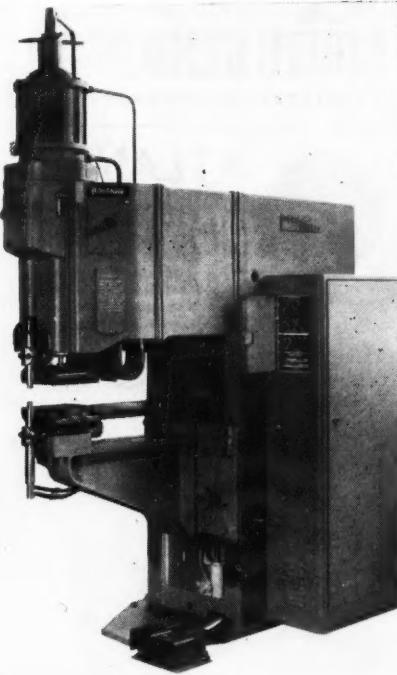
**H. P. PREIS ENGRAVING MACHINE CO.**

657 Route 29

Hillside, N. J.

range of shapes and sizes of work to be welded, especially in deep-throated welder models. Welding currents are said to be essentially constant when magnetic work or fixtures are moved into the work area. The same applies when work clearances vary, it is stated.

The Taylor-Winfield Tri-Phase Welder is designed to produce high quality welds



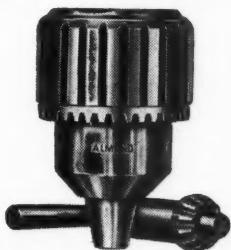
Taylor-Winfield "Tri-Phase" Welder

in a wide variety of materials, including low carbon steel, stainless steel, aluminum alloys, magnesium alloys, Monel, Inconel, brass alloys, and so on. The machine may be obtained in spot, seam, projection, and upset-butt types.

### **Milwaukee Model FS Die Filer**

Designated as the Milwaukee Model FS, a bench type reciprocal filing machine which is said to perform the three die-making operations of filing, sawing, and lapping without changing overarms is

## ALMOND DRILL CHUCKS



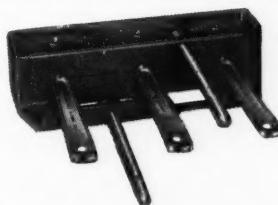
Maximum Gripping Power with  
Extreme Accuracy and  
Long Life.

Write for Catalog.

**T. R. Almond Mfg. Co.**  
Ashburnham, Mass.  
U. S. A.

## COOK

3 in 1 Lead Hammer Mold!



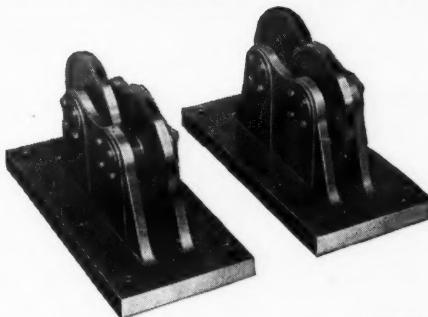
Makes three lead hammers as fast as ordinary molds make one!

Expressly designed to mold hammer heads in 3, 4, 5 or 6-lb. sizes around COOK SHUR-GRIP HAMMER HANDLES . . . the drop forged handles that mean certain safety! Just close lid, pour and PRESTO . . . three hammers are molded! Ask for literature and prices!

LAWRENCE H. COOK, INC.  
65 MASSASOIT AVENUE  
EAST PROVIDENCE 14, R. I.

## PILLOW BLOCK BALANCING WAYS

Especially suited for large diameter work, as a sub-base can be made of proper height to give necessary clearance for work. Anderson Pillow Block Balancing Ways are precision built with chilled iron discs which rotate with minimum friction on sensitive special bearings. Many manufacturers have endorsed them for profitable, efficient, static balancing.



Built in 1000, 2000, 5000, 10,000  
and 20,000 Capacities

Write for Bulletin 10-22



**ANDERSON BROS. MFG. CO., Rockford, Ill.**

Balancing Ways, Roto Checkers, Hand and Power Scrapers,  
Spotters, Hand and Power Hydraulic Straightening Presses.

now being manufactured by the Rice Pump & Machine Co., 1024-D S. 40th St., Milwaukee, Wis. The design of the machine features a deep-throated all-purpose overarm equipped with an upper chuck in the overarm assembly which permits files, saws, or lapping sticks to be chucked at the upper as well as the end of the unit. The spring tension on saws and thin files can be readily adjusted by moving the overarm chuck assembly up or down. Another advantage which is said to be provided by the overarm assembly is the fact that it permits chucking close to the workpiece, thereby

## AMAZING!

THE WAY THESE METAL SCRAPERS  
GIVE FINER FINISHES FASTER



Forthman scrapers tipped with CARBOLOY Cemented Carbides stay sharp far longer than steel scrapers, permit finer finishes, and save on scraping cost per piece. Write for FREE Folder.

MANUFACTURED BY

CLIFF J.

**FORTHMAN** 1633 ELKTON PL.  
CINCINNATI 24, OHIO

**Severance**  
CARBIDE  
**CHATTERLESS**  
**COUNTERSINKS**

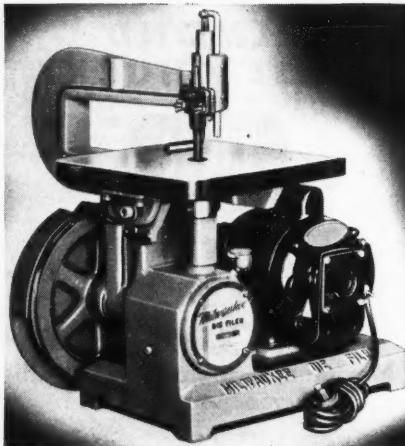
HIGH SPEED

- Shear cutting action
- Speedy—for air-tested seats
- Materials—up to 63-C hardness

17 stock sizes up to 2" diameter  
30° 41° 45° and 60° angles with C/L  
Shanks—plain, tang drive, tapers

ENGINEERING SERVICE  
Write for Bulletin 15-C

**SEVERANCE TOOL INDUSTRIES, INC.**  
724 Iowa Ave., Saginaw, Michigan



Milwaukee Model FS Die Filer

assuring maximum rigidity of saws and files.

The lower chuck is an additional feature of the machine which is claimed to promote precision workmanship. A ball joint permits accurate alignment of files with warped, crooked, or twisted shanks before they are rigidly clamped in working position, it is claimed. Caps having serrated faces with V-grooves firmly grip and align files, saws or stones of any size or shape.

The all-purpose overarm of the Milwaukee Model FS can be instantly released and swung clear of the table for frequent and quick inspection and checking of the workpiece. An adjustable stop is said to assure immediate return of the overarm to the original setting. The work table is mounted on two brackets and may be tilted 15 degrees in four directions for the



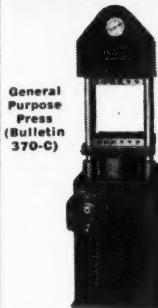
## A REAL HELPING HAND

It's a help that die makers, tool makers, machinery builders and general machinists have long sought—a more accurate and surprisingly faster way of transferring blind screw holes.

The Heimann Transfer Screw Set is a self-contained, complete tool. No wrenches or pliers are necessary. Made in  $\frac{1}{16}$ " to 1" diameters. Send for price list.

**HEIMANN MFG. CO.**  
330 Lincoln Ave.  
Urbana, Ohio

## HYDRAULIC PRESSES



General  
Purpose  
Press  
(Bulletin  
370-C)

### SPEED PRODUCTION REDUCE COSTS

When you need presses for:

- |                      |             |
|----------------------|-------------|
| Blanking             | Forging     |
| Piercing             | Coining     |
| Flanging             | Embossing   |
| Bending              | Hobbing     |
| Forming              | Die Sinking |
| Drawing              | Extruding   |
| •                    |             |
| Assembling           | Testing     |
| or for               |             |
| General Purpose Work |             |

Look into the many features of Watson-Stillman's full line of Hydraulic Presses. Write for information about presses for YOUR job.

**WATSON-STILLMAN**

225 ALDENE ROAD  
ROSELLE, N. J.

## "OLIVER" 30-inch Metal Cutting BAND SAW

Has low speed geared head direct connected to lower wheel for cutting risers, gates, sprues.

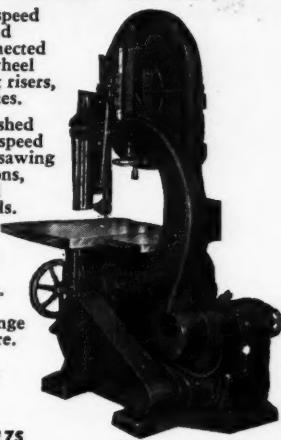
Also furnished with high speed motor for sawing compositions, woods and sheet metals.

Powerful!  
Cuts true  
and steady.

Quick-change  
rim and tire.

Automatic  
brakes.

Write for  
Bulletin 2175



Oliver Machinery Co., Grand Rapids 2, Mich.

## HOW TO GRIND CARBIDE CUTTING TOOL BITS ECONOMICALLY



### Here's tool grinding at its best!

Employing 3-step progression—rough, semi-finish, and finish or hone—on one machine, this LeMaire 3-Wheel Grinder produces keener edge in fraction of time. Because tools go to diamond wheels in better condition, life of diamond wheels is considerably lengthened. Both labor and wheel costs are reduced—time is saved—production is increased.

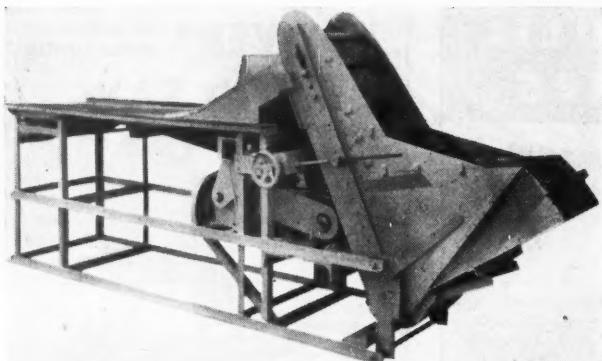
Wouldn't you like to know more about this remarkable 3-Wheel Grinder? Send for descriptive folder.

## LeMaire Tool & Mfg. Co.

2657 S. Telegraph Road  
Dearborn, Michigan

Designers and builders of unit and way type machines for single or multiple spindle drilling, boring, reaming, tapping, etc.—Twin Ram Hydraulic Units—Match-it Gear Chucks.

### Prutton Inspection Table



accurate filing or sawing of compound angles. Adjustable hold-down fingers are said to hold the work flat against the work table in any desired position.

### Prutton Inspection Table

An inspection table designed for the inspection of small parts, such as nuts, bolts, washers, and so on, at rates up to 130,000 pieces per hour is announced by

### DON'T WAIT UNTIL TAPS BREAK OFF — and then wish you had a set of **WALTON Tap Extractors**

Have them on  
hand for this  
emergency.

Remove  
Broken Taps  
Quickly and  
Easily.

Write for folder  
No. 10 and full  
details of 30 DAY  
FREE TRIAL  
OFFER.

**THE WALTON COMPANY**  
Hartford 10, Conn.

the D. H. Prutton Machinery Co., 5295 W. 130th St., Cleveland, Ohio. The unit includes an elevator hopper which is arranged to feed any small mass-production item onto a 2 x 8-foot conveyor belt for visual inspection. A multi-speed transmission and variable angle control allow for any desired distribution of

the work on the table.

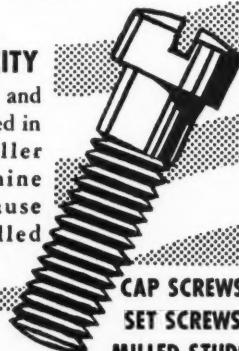
The Prutton Inspection Table requires a floor space of 48 square feet and is built so that all moving parts are readily accessible.

### Natco Drill Testing Machine

To enable a prominent drill manufacturer to test the durability of its tools, the National Automatic Tool Co., Inc.,

### CONCENTRICITY

of head, body and  
thread is assured in  
every Ottemiller  
Screw Machine  
Product because  
they're "milled  
from the bar."

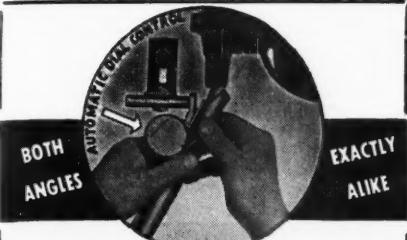


CAP SCREWS  
SET SCREWS  
MILLED STUDS  
COUPLING BOLTS

PRECISION MILLED by

WILLIAM H. CO.  
*Ottemiller*

YORK, PENNSYLVANIA  
DISTRIBUTORS IN PRINCIPAL CITIES



### with MAJESTIC DRILL SHARPENER

Now you can always have perfectly sharpened, fast-cutting drills that really take the proper bite and cut smoothly without chatter. Simply turn the Automatic Dial Control, and the Majestic Drill Sharpener is set to grind both cutting edges and both angles exactly alike. Takes any size drill from  $5/32''$  to  $1''$ , straight or No. 2 taper shank. Fits any grinder. Adjustable for hard or soft materials. The Majestic Drill Sharpener is a real production tool that assures longer drill life, speeds up the work and quickly saves its cost in factories, garages and repair shops. Price \$10.95 F.O.B. Factory, ask your supply house, or order direct. Many thousands in use. Circular on request.

**Dealers, Jobbers: Write for Information.**

### MAJESTIC DRILL SHARPENER CO.

1337 S. 6th St.,

Minneapolis 4, Minn.

# CLEAR

### NAMEPLATE MARKING

MODEL  
No. 4



The nameplate on your product is your signature; keeps it neat and legible! Accurate location and alignment are assured with this NAMEPLATE DETAIL PRESS.

- Simple Operation
- Perfect Alignment
- Uniform Depth

**GEO. T. SCHMIDT, INC.**

 1806 W. BELLE PLAINE AVE.  
CHICAGO • 13 • ILLINOIS

Now Available in



### WENDT-SONIS CRITERION

#### BORING HEADS AND SHANKS

New, more complete range of sizes makes W-S Criterion Boring Heads and Shanks readily adaptable to a wide variety of machines and jobs. Heads have threaded backs which can be fitted with interchangeable shanks. The clearly calibrated lead screw is of heat treated alloy steel, with threads ground from the solid AFTER HARDENING. Adjustments of .0005 or less are easily made. For longer life and continued accuracy insist on Criterion.

#### FREE! NEW W-S CRITERION

**CATALOG** Contains latest

data, sizes and prices.

**WRITE:** Wendt-Sonis Com-

pany, Hannibal, Missouri;

580 North Prairie Ave.,

Hawthorne, Calif.; 1361

West Lake St., Chicago, Ill.

Warehousing Facilities: East-

ern Carbide Corp., 909 Main

St., New Rochelle, N. Y.



**WENDT SONIS**

#### CARBIDE CUTTING TOOLS

Boring Tools • Centers • Counterbores • Spot-facers • Cut-Off Tools • Drills • End Mills • Fly Cutters • Tool Bits • Milling Cutters • Reamers • Roller Turning Tools • Special Bits

## MARVECO LIVE CENTERS

- HIGH SPEED
- LONG LIFE
- HEAVY DUTY



MARVECO guaranteed to outperform and outlast any other live center. Write for free catalog, "The Marvels of Marveco."

SEND US  
YOUR CENTER PROBLEMS.

**MARVEL TOOL & MACHINE CO.**

3401 E. McNichols Road, Detroit 12, Mich.

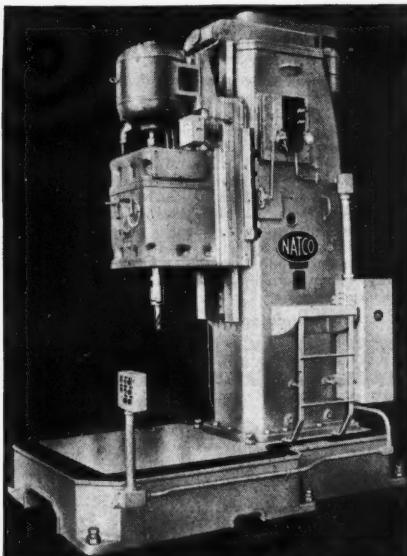
## GAMMONS REAMERS

Manufacturers of  
The Gammons Helical Taper Pin Reamer  
The Gammons Helical Chucking Reamer  
The Gammons Helical Die Maker's Reamer  
The Gammons Duplex Taper Pin Reamer  
Special reaming problems invited

**THE GAMMONS-HOAGLUND CO.**  
MANCHESTER CONNECTICUT

Dept. 27, Richmond 27, Ind., has developed the heavy duty hydraulic drilling machine illustrated herewith which is designed to operate at peak efficiency under abnormal or overloaded conditions.

To accommodate unusual stresses and loads at various speeds, the machine is equipped with a heavy duty single spindle 7-speed geared head. A 30 h.p. motor maintains a synchronous speed up to the rated horsepower when drills become



Natco Drill Testing Machine

dull. As the load builds up to a predetermined value, a torque limiting device operates to stop the motor. A shear pin arrangement is also provided to prevent the destruction of gears in the head in the event of serious overloading.

A range of 42 different speeds is available through the use of change gears. The machine features a rugged frame construction to provide maximum rigidity to the column, head, and spindle.

### Elwell-Parker Low-Lift Platform and Crane Truck

Said to be effective for many load-handling operations in manufacturing, warehousing, and shipping, a power industrial truck combining a low-lift platform and



### FORD ROTARY FILES

The Right File for  
the Right Job

Three Distinct Types

1. Hand Cut Files
  2. Ground Burs
  3. Carbide Cutters
- Rotary Files Exclusively  
for over 25 Years.  
Available from your  
Mill Supply House.
- M. A. FORD MFG. CO., Inc.  
744 W. First Street  
Davenport, Iowa



### MARK IRON, STEEL and CARBIDES

### THE *Echograph* Mark WAY

Original Electric Etcher. Thousands In Daily Use

Mark hardened parts, tools, dies, gages  
and fixtures of any ferrous metals includ-  
ing the hardest alloys and carbides —  
quickly — plainly. • Three sizes to meet  
all requirements.

- Write for circulars and prices.

### BREWSTER-SQUIRES CO.

17 Washington St.

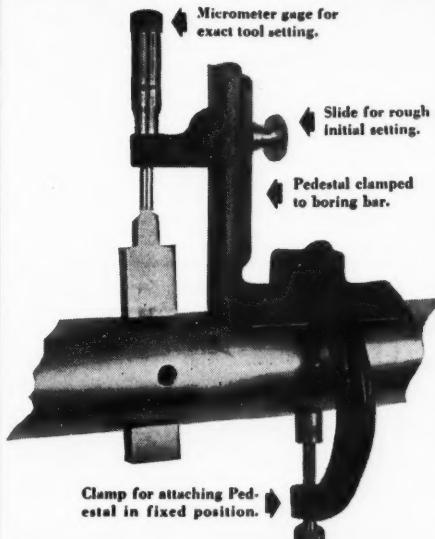
Tenafly, N. J.

### ...for more than 1001 jobs

• The Hjorth Lathe has the speed, accuracy, handling ease and dependability that appeals to every operator. That's why you'll find the better shops equipping with the Hjorth Lathe.

**HJORTH LATHE & TOOL CO.**  
8 BEACON STREET                    WOBURN, MASS.

## HERE IS A REAL TIME-SAVER!



... AND WORK-SAVER, TOO!

### *The Bartelt Pedestal Micrometer*

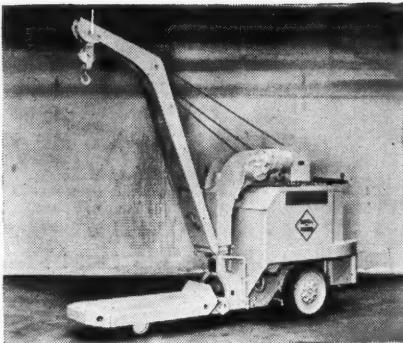
Enables you to set boring tools *accurately* from the bar diameter—eliminates common cut-and-try methods. Permits quick micrometer height measurements from flat or round surfaces. Can be used as a production-inspection tool with a wide range of settings. Ideal for jobbing shop and toolroom mechanics. Quality construction, moderately priced—sold direct-to-you by the manufacturer. All components precision machined of high grade materials and carefully assembled. Packed in carrying case with necessary accessories. Made in eight models for various applications. Write today for literature and direct-to-you prices.

### BARTEL ENGINEERING CO.

1216 Partridge Ave.  
BELOIT • WISCONSIN

a crane is announced by The Elwell-Parker Electric Co., 4205 St. Clair Ave., Cleveland 14, Ohio. The crane is designed to pick up a load from floor level and lift it to a hook height of 8 feet within a radius of 45 degrees either left or right from the base. Its shape and mechanism provide a means for reaching, high-stacking, or taking down raw materials or finished products in such form or package that they may be handled with rope or cable slings.

The platform of the truck is designed to lift and transport loads weighing up to 3 to 5 tons, depending upon the size and



Elwell-Parker Low-Lift Platform and Crane Truck



## CUTTERS

**For Flat Bars  
Rods • Angles  
Wire Rope**

**MADE IN THREE SIZES:**

The sturdiness and dependability of these cutters reflect our more than 50 years of experience.

T. H. LEWTHWAITE MACHINE CO.

317 EAST 47TH ST.

NEW YORK 17

**CARROLL  
AND  
JAMIESON  
LATHES**

**16"**



**CARROLL & JAMIESON  
MACHINERY CO.**

**Write  
for  
Bulletin.**

**12 Speed Geared  
Head Motor Drive  
Timken Mounted  
Spindle.**

**Modern Design—  
Liberal  
Dimensions.**

model. Loads may be piled directly on the truck platform or on skids under which the platform can be maneuvered after loading. The crane and platform are operated independently of each other so that the crane may be used by itself at any point any length of time. The boom is of box girder construction and is 8 feet long. Its foot is pivoted on a non-friction bearing-equipped turntable base mounted on the forward end of the truck.

The truck body remains stationary while the operator moves the boom left or right by merely manipulating a lever. Cables which provide further control and which raise or lower the boom and its load are operated by means of a push-button pendant located near the hook. A manually controlled brake on the crane column enables the operator to lock the boom in any overside or central position to avoid swinging of the load during truck operation on uneven floors.

The load-lifting capacity ranges from 1,000 to 2,000 lb., depending on the model.

## MUMMERT-DIXON SWING FRAME GRINDERS



Sizes 12", 14", 16", 18", 20" and 24" wheels.

Ask for Descriptive Circular

M U M M E R T - D I X O N C O .

120 Philadelphia St. • Hanover, Pa.

# FINISHED



## MACHINE KEYS

We are able to furnish the following types of finished machine keys of any size and taper: Gib head taper keys, Plain taper keys, Straight keys, Round end feather keys and Tit keys. We can supply you quickly with the quantities you need at the specifications you require.

Send for new catalog giving complete information on Woodruff keys, taper pins, machine keys and machine racks.

### STANDARD STEEL SPECIALTY COMPANY

BEAVER FALLS

PENNSYLVANIA

PLANTS - BEAVER FALLS, PA. • HAMMOND, IND.

## PRECISION BROACHES

MANUFACTURERS of standard and special broaches—broaching fixtures. A complete service for sharpening, reconditioning and converting broaches. Standard keyway broaches in stock.

### Dependable, Prompt Service

Several territories open  
for representation.

### CONANT Tool & Engineering Co.

347 WEST 107TH STREET  
CHICAGO 28, ILLINOIS

### How TO MAKE TAPS AND REAMERS LAST LONGER!

Just because taps and reamers may seem to be worn out is no proof that they really are. It may be that the trouble is not with the tap or reamer itself but rather with the tool holder.

This is where the Ziegler Tool Holder comes in. By compensating for inaccuracies in aligning the work with the spindle, it eliminates the over-size and bell-mouthed holes that are often wrongfully blamed on the cutting tool.

Change over to Ziegler Tool Holders and see how much longer you can keep your taps and reamers in service.



Types to fit any  
machine used for  
tapping or reaming.

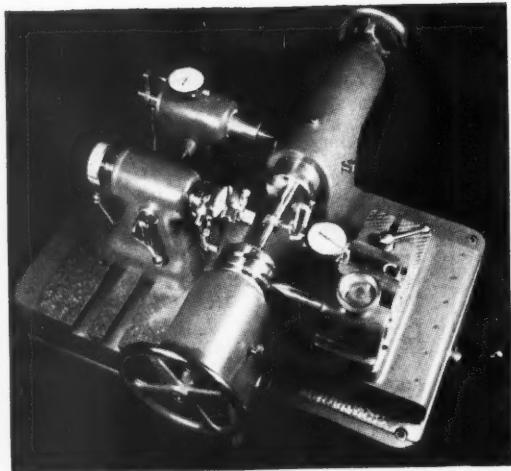
Ziegler  
ROLLER  
DRIVE

FLOATING HOLDER  
for Taps and Reamers...

W. M. ZIEGLER TOOL CO.

1928 TWELFTH ST.  
DETROIT 16, MICH.

WRITE FOR  
CATALOG



"Red Ring" Universal Gear  
Checker

### "Red Ring" Universal Gear Checker

Said to be smaller and more compact, requiring less floor space, and easier to move from one location to another in the

plant than its predecessors, the "Red Ring" Universal Gear Checker shown herewith has been brought out by the National Broach & Machine Co., 5600 St. Jean Ave., Detroit 13, Mich. The unit may be obtained with or without a base, thus enabling the table which supports the checking heads to be used on a bench or elsewhere in the plant if desired.

Its accuracy is said to make the Red Ring Universal Gear Checker ideal for toolroom use and on final inspection, and its simplicity is claimed to make the unit equally desirable for service in the shop alongside gear cutting and finishing machines. Designed to handle gears up to 10 inches O.D., the unit is constructed to check lead, eccentricity, and both tooth spacing and tooth parallelism. It measures 18 inches wide x 29 inches long overall.

**Micro Supreme**

**LAY-OUT AND IDENTIFICATION DYE**

12 COLORS\*

For Tool, Die, Pattern or Template layout on metal . . . Quick identification of stock and parts . . . Shows up in sharp relief—dries instantly—easily removed . . . Write for circular.

\*Purple shipped unless otherwise specified.

**MICHIGAN CHROME &  
CHEMICAL COMPANY**  
6340 E. Jefferson Ave. • Detroit 7, Mich.

### DORMAN AUTOMATIC REVERSE

#### TAPPERS tap holes 2-56 to 2"

##### FRiction OR POSITIVE DRIVE

Single adjustment changes from positive drive to light friction drive . . . prevents tap breakage.

No. 1 FRiction OR POSITIVE DRIVE TAPPER drives 2-56 to  $\frac{3}{8}$ " tap in steel or  $\frac{1}{4}$ " in aluminum.

No. 2A POSITIVE TAPPER drives  $\frac{3}{8}$ " to  $\frac{7}{8}$ " tap in steel.

No. 3A POSITIVE DRIVE drives  $\frac{1}{2}$ " to  $\frac{1}{4}$ " in steel,  $\frac{1}{4}$ " to  $\frac{3}{8}$ " pipe taps.

No. 4A CAP. drives  $\frac{3}{8}$ " to 2" in steel incl. pipe taps.

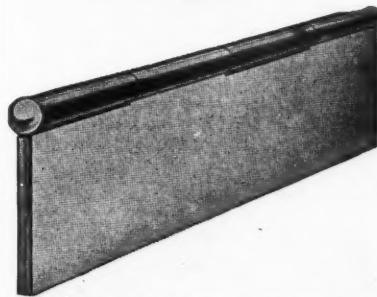
All units efficient as production threaders using Round Split, Button, Acorn Dies

Delivery from Stock  
WRITE FOR BULLETIN



### DORMAN MACHINE TOOL WORKS

36 S. MAC QUESTEN PKWY.  
MOUNT VERNON • NEW YORK



## CONTINUOUS HINGES

Manufactured by

**AUTO MOULDING  
& MFG. CO.**

WRITE FOR STOCK LIST

1114 E. 87TH ST.

CHICAGO 19

## ARTUS PLASTIC SHIM



AND  
FEELER  
GAUGE  
STOCK

The COLOR  
tells the  
THICKNESS

Each thickness a distinctive, easy to identify color. Impervious to oil. Long lasting. 5"x20" sheets. Special sizes to order. Handy assortment, shim stock, 12 colors—12 thicknesses (.001-.050). Bound together. \$4.25.

Order today. Immediate delivery.

**INDUSTRIAL PRODUCTS SUPPLIERS**  
434 Broadway, Dept. M, New York 13, N. Y.

## Dependable **B-RIGHT-ON** SOCKET SCREW PRODUCTS



Special Low Head  
Cover Plate Screw

The dependable B-Right-On Socket Screw Products line includes Hollow Set Screws and Pipe Plugs, Socket Head Cap Screws and Stripper Bolts.

Production runs solicited.

Our complete, centrally located stock is at your service. Write today for our completely revised stock list and prices.

**THE BRIGHTON SCREW & MFG. CO.**  
READING RD. AT DORCHESTER CINCINNATI 2, OHIO

**Accurate Hole Transfer Made Easy With  
NIELSEN TRANSFER SCREWS**



Simply insert in holes, invert, strike sharply and you have centers and drill circles perfectly located. Reduce time and eliminate spoilage of other methods. 7 sizes U.S.S. Inexpensive — Last for years. Write for Circular.

**NIELSEN TOOL &  
DIE COMPANY**  
1960 W. Eleven Mile Rd.  
Berkley, Mich.

**Speed Up Production With  
JULIUS MACHINE SHOP DOLLIES**

**For Handling Your Shop and Tote Boxes**

Use either as dolly or with lift truck. Standard sizes built to handle 1,000 lbs. Special sizes to order. Prompt delivery. State size of boxes and load to be carried for quotation.

**FRED S. JULIUS MFR.**

Racks - Skids - Trucks - Dollies  
LANCASTER 5, PA.

**TAPPER WITH NEW . . .**



**JACOB  
RUBBER-FLEX  
CHUCK**

**No. 00 B Positive  
\$40.00**

**No. 00 C Friction  
\$45.00**

**From No. 10 to  
5/16 Cap.**

**Established  
1891**

**Errington  
Mechanical  
Lab., Inc.**  
Main Office  
and Works:  
Staten Island 4,  
New York

**"Cadet" Type 70FAS Heavy  
Duty Grinder**

The Standard Electrical Tool Co., 2487 River Rd., Cincinnati 4, Ohio, announces the addition to its "Cadet" line of heavy duty grinders of a grinding machine with  $7\frac{1}{2}$  h.p. 1,150 r.p.m. motor for 20 x 3-inch grinding wheels.

Designated as the Type 70FAS, the machine is ball bearing equipped and includes guards that are made of structural plate steel and adjustable for wheel wear.

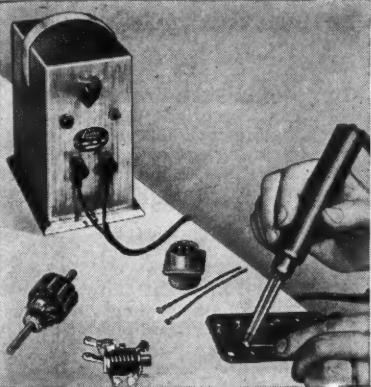


"Cadet" Type 70FAS Heavy Duty Grinder

Each guard has a hinged door, exhaust outlet, and adjustable spark breaker. A push-button safety starter having overload protection is conveniently located on the machine, optional equipment of which includes a removable water pot and safety glass eye shields.

**Magnus "Krazy-Dip" Cleaning  
Machine**

Product of the Equipment Division, Magnus Chemical Co., Inc., Garwood, N.J., the Magnus "Krazy-Dip" Cleaning Machine shown herewith is designed for the washing of metal parts in automotive and aircraft shops, service stations, shipyard repair shops, railroad repair shops,



## FOR FASTER, SAFER SOLDERING

The Luma resistance method of soldering is the accepted way for small shops requiring single operation to large plants with many types of operations. Write for complete information about this remarkable tool.

**LUMA ELECTRIC EQUIPMENT CO.**  
P. O. Box 132-M.S. Toledo 1, Ohio

## SAFETY FIRST, LAST and ALL WAYS!

Cut KEYWAYS Safely

with **The GLENNY  
Adjustable  
Expansion  
PUSH BROACH**

★ Safe from rejects thru error—the Glenny assures maintained accuracy on all work.

★ Safe from rejects due to scoring of the bore.

★ Safe from blade breakage because sleeve of broach protects blade when tool is under pressure.

★ Safe for operator—sleeve acts as guard—unprotected, unsupported blades became a hazard to face and body of operator when cutting pressure is applied.

NOW—NEW GLENNY BUSHINGS ADAPT STANDARD GLENNY BROACHES TO MANY NEW TIME AND MONEY SAVING OPERATIONS



SEND  
FOR  
NEW  
BULLETIN  
11

**DEPT. 11** The EAST SHORE  
MACHINE PRODUCTS CO.

525 EAST 140th STREET • CLEVELAND 10, OHIO

## NICHOLSON FAST-ACTING 2-WAY VALVES

# Save Muscle

### IMPROVE PRESSURE CONTROL

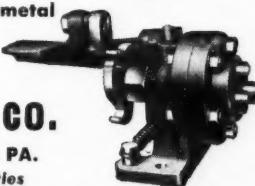
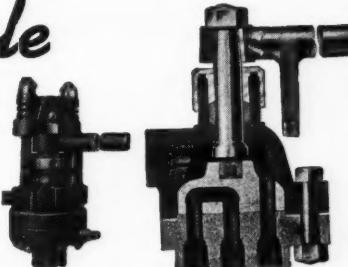
Turning on or off instantly with 60° lever travel, Nicholson valves are widely used as replacements for gate or globe valves. Save time and labor, minimize the differential between opening and closing pressures. Six (6) metal combinations for all mediums.

**CATALOG 546.**

**W. H. NICHOLSON & CO.**

136 OREGON ST. WILKES-BARRE, PA.

Valves ★ Traps ★ Steam Specialties



Above, lever models; press. to 5000 lbs. Left, foot model; press. to 300 lbs. Also a full line of 3 and 4-way cylinder control valves;  $\frac{1}{8}$ " to  $1\frac{1}{2}$ ".



#### Magnus "Krazy-Dip" Cleaning Machine

A cold cleaning machine that requires no heating, the Krazy-Dip is said to clean unusually fast by providing for mechanical agitation of the parts in the cleaning solution at a rate of 160 times a minute. The turbulent flowing solution is forced into all crevices and hard-to-reach areas, and carbonized oil and dirt are said to be quickly removed.

Sturdily built of 14 gauge hot rolled steel sheet and with hinge cover complete with fusible safety link, the Krazy-Dip Cleaning Machine is designed for operation from an air compressor at an air consumption of 1 to 2 cubic feet per minute and a minimum air pressure of 50 p.s.i.

and metal-working plants. The machine is fully automatic in operation, the only manual labor required being that of loading and unloading the machine.

## STOP

## TOOL CHATTER



ELK TOOL HOLDERS, Precision Built, eliminate bit vibrations. Universal—Straight, Right or Left Hand Positions. ONE will replace TEN single purpose Tool Holders.

Write for Bulletin

**ELK TOOLS, Inc.**

71 W. Broadway

New York 7, N. Y.

#### Reypo 15-Inch Drill Press

Manufactured by the Reypo Corp., 5751 W. 98th St., Los Angeles 45, Calif. the Reypo 15-Inch Drill Press shown

## LOW COST LOCATING BY CENTER SCOPE

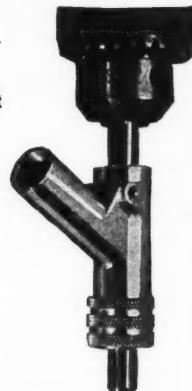
Dependable  
Accuracy.

Ample Adjustment  
For Spindle  
Run-Out.  
For  
Drill Presses,  
Lathes, Mills.

SERIES "M"  
**\$24.50**  
CASE EXTRA  
**\$3.50**

Bulletin M-12.

**CENTER SCOPE PRODUCTS**  
3829 San Fernando Rd., Glendale 4, Calif.





**HIGH PRECISION ACCURACY!  
DEEP HOLE BORING  
AND FINISHING**

Special process insures extreme accuracy, exceptionally fine micro finish. Deliveries to suit your requirements. Quotation inquiries invited.

DEPT. MS

UEBELHOER BROS., INC.

848 Kensington Ave.

Buffalo 15, N. Y.



**ASSEMBLY LINE  
FOLLOW THROUGH**

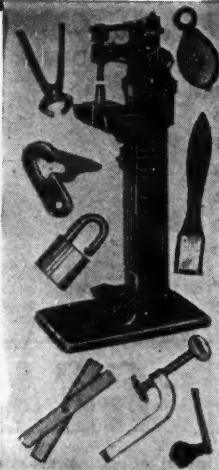
Assembly lines simplified -- label each part with Topflight Printed Self-Adhesive Tape for code identification--omit instruction labels. Produced in rolls to fit standard tape dispensers. Easy to Apply.

**TOPFLIGHT TAPE CO.  
YORK, PENNSYLVANIA**

**Free  
RIVETING  
ANALYSIS**

Send blueprints or sample assemblies of your work for analysis. We will give quotations and recommend the proper HIGH SPEED Riveting Hammer to do the job right . . . and fast.

*No obligation.*



**THE HIGH SPEED  
HAMMER COMPANY, INC.**  
RIVETING HEADQUARTERS  
307 NORTON ST. ROCHESTER 5, N. Y.



**ROTAB... MACHINING,  
HOLDING AND CHECKING DEVICE**

By having the verniers positioned on the same axis with rotating members, perfect synchronization between readings and controls are assured. Back-lash worries are eliminated. Parts held for checking or machining can be rotated or tilted without changing original clamping. Three sizes of faceplates available: 12", 24", 36".

The Rotab can save you hours of time. All your angle checking can be done with the one clamping.

*Send for folder giving full information.*

**MACHINE PRODUCTS CORPORATION**

6771 E. McNICHOLS ROAD

DETROIT 12, MICHIGAN

**CARROLL**  
**DIVIDING HEADS**



Catalog  
on  
Request

3 SIZES - 4 MODELS - 6" to 12"

**TROYKE MFG. CO.**  
4422 APPLETON ST. CINCINNATI 9, OHIO

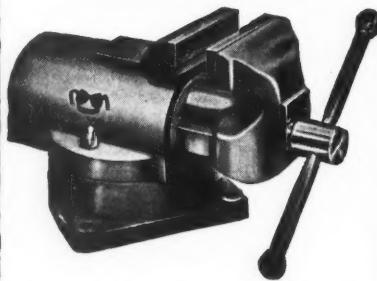
# GEARS

## GOOD GEARS ONLY

All Kinds—Any Quantity  
AT THE RIGHT PRICE  
**THE CINCINNATI GEAR CO.**  
Wooster Pike Cincinnati, Ohio

### TOOL ROOM VISES

Immediate Delivery



Long guides for jaws provide strong grip. Easy swivel. Jaws: 3½", 4¼", 5" open to 5", 6", 8".

A few choice territories open for representatives.

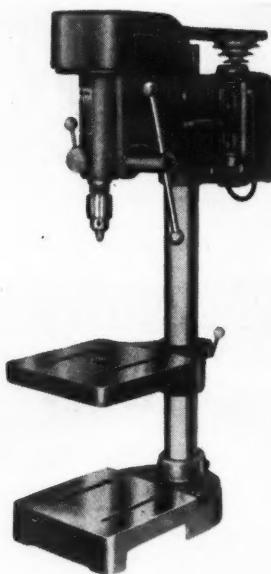
Write for further information.

**VEIT & YOUNG**

Established 1926  
HUNTINGDON VALLEY, PA.

herewith features a depth stop which operates directly on the feed pinion between the two lower quill bearings, thus eliminating any side thrust or consequent deflection of the drill point, it is claimed. The quick setting gage of the press is calibrated in sixteenths of an inch.

The spindle has a travel of 4 inches, with four speeds from 630 to 4,850 r.p.m. The design of the free floating drive is said to prevent whip or misalignment and includes two sealed ball bearings for



Reypo 15-Inch Drill Press

supporting purposes. The drive is effected through involute splines and mating involute keys. Two additional sealed ball bearings support the spindle.

Both the table and base of the drill press have ground working surfaces of 10 x 10 inches and are provided with parallel slots for ½-inch bolts. An additional feature of the machine is the provision of three quill bearings in the head.

### Studebaker Hand-Operated Portable Hydraulic Press

A hand-operated portable hydraulic press for laboratory or production work is now being introduced by the Stude-



## SCHAUER SPEED LATHES

**POLISH • LAP • DE-BURR**

**Small Metal and Plastic Parts  
Better, Speedier, at Low Cost**

For the type and size designed  
to meet your particular needs

Write for Catalog 480

**The Schauer Machine Co.**

Originators of Today's Speed Lathes  
2060 Reading Rd. Cincinnati 2, Ohio

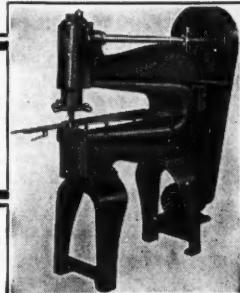
# SAVAGE

NIBBLING  
MACHINE

NIBBLE  
YOUR COSTS

Ask for  
Free Bulletin "H"

Capacity  $\frac{3}{4}$ "  
mild steel



FOR TUBE SLOTTING, TUBE SHAPING  
AND CUTTING FLAT SHEETS BY TEM-  
PLATE OR TO A SCRIBED LINE.

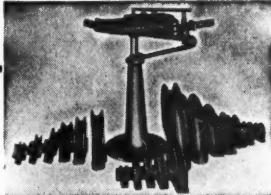
Manufactured by

**W. J. SAVAGE COMPANY**  
Knoxville Tennessee

Since 1885  
Pioneer Mnfrs. of Nibbling Machines

BEND PIPE

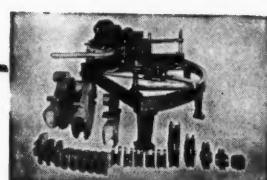
BY HAND or MOTOR  
MACHINES TO BEND COLD PIPE, CONDUIT, BOILER TUBING  
AND SOLID BAR . . . BENDING TABLES ALSO AVAILABLE



Above: Hand-powered Type A-30 . . . up to 180° bends . . . all sizes from  $\frac{1}{2}$ " to 2". Only 7 parts. World's fastest, simplest machine. Note assortment of bending dies . . . this process makes shorter tangents than any other. Occupies only 18" x 18" floor space!

*Other Sizes Available*

Factory and Main Office: 14 Furnace St.,  
Poultney, Vermont



Above: Motor-powered Type E . . . bends fixed radii of 6 to 1 up to 90°. Type E bends  $2\frac{1}{2}$ ", 3",  $3\frac{1}{2}$ " and 4" pipe. 3 horse-power motor. Floor space occupied—7' 6" x 7' 6". Other power machines up to 8" capacity.

"American"  
PIPE BENDING MACHINE  
Company INC.

baker Machine Co., 1221 S. 9th Ave., Maywood, Ill. Optional with the unit are electrically heated platens for plastics or other operations that require temperatures. The heating element is thermostatically controlled for even distribution of heat over the entire platen.

Operation of a hand lever produces a pressure of up to 8 tons between the platens. The press can be efficiently adapted to broaching, assembling, piercing, oil grooving, riveting, sizing, forming, flanging, staking, forcing, and small die tryout operations. Special dies can be developed for any type of product requiring press work.

## MEINHARDT

E  
I  
N  
H  
A  
R  
D  
T

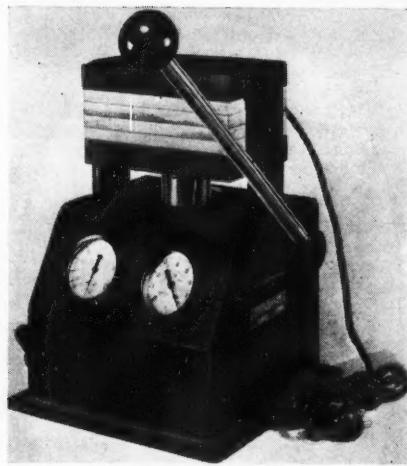
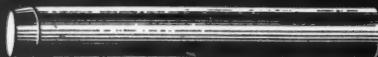
### Highest Quality DIAMOND DRESSING TOOLS and DIAMOND GRINDING and FINISHING WHEELS

Write Today for a complete descriptive catalog of the tools or wheels you need.

MEINHARDT DIAMOND TOOL CO.  
2810 Milwaukee Ave., Chicago, Ill.



SCHULTZ & ANDERSON  
*dowel pins*



Studebaker Hand-Operated Portable Hydraulic Press

The Studebaker Portable Hydraulic Press is self-contained and self-powered and is controlled entirely by a hand lever and release valve. Finished in baked enamel and durably constructed, the press has a 10 x 10-inch base, 13-inch height, 3-inch hydraulic ram travel, 5½ x 7-inch platens with openings (to suit user requirements) from 0 to 6 inches, and weight of 70 pounds.

### Palmer-Shile Side Dump Trailer Truck

The Palmer-Shile Co., 16022 Fuller Ave., Detroit 27, Mich., is now manufacturing a side dump trailer truck in two styles for use in all types of industrial

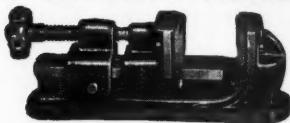
### Immediate Delivery!

Standard Size Dowel Pins from  $\frac{1}{8}$ " to 1" diameter and from  $\frac{3}{8}$ " to 6" length supplied in .0002 and .001 over basic sizes. Unless otherwise specified, .0002 oversize will be furnished.

Dealer inquiries invited.

SCHULTZ & ANDERSON CO.  
111 EDISON PLACE NEWARK 5, N. J.

## GEM MACHINE VISES For TOOL-ROOM or Production.



Six sizes, 3" to 12". Many exclusive features.  
You see them everywhere. Write for circular.

J. E. MARTIN MACHINE WORKS  
Springfield Ohio

# CAMS

Our ROWBOTTOM cam cutting facilities are at your disposal for your cam requirements.

Let us have your inquiries.

BLOOMFIELD TOOL CORP.  
37 FARRAND ST. BLOOMFIELD, N. J.

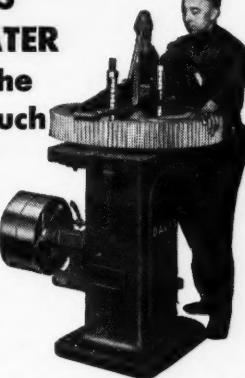
## Why Use A Shaper to cut Keyways when a

### DAVIS KEYSEATER

will do the  
job so much  
quicker

and  
better?

Send  
for  
Circular

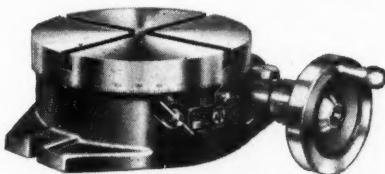


### DAVIS KEYSEATER CO.

Exchange and Glasgow Sts.  
ROCHESTER, N. Y.

BRAND NEW  
PRECISION

# ROTARY TABLES



9"—\$ 97.00

12"— 175.00

15"— 195.00

18"— 235.00

18"— 365.00 Extra Heavy Duty

21"— 510.00 Extra Heavy Duty

25"— 600.00 Extra Heavy Duty

OUR ROTARY TABLE WILL TAKE THE PLACE OF A COSTLY FIXTURE. IT IS USED FOR ALL KINDS OF WORK ON MILLING MACHINES, SHAPERS, DRILL PRESSES AND HORIZONTAL BORING MILLS.

#### IN STOCK

Special Thread Taps &  
Dies. Left Hand Taps &  
Dies. Plug & Ring  
Thread Gages. Drills,  
Reamers, Milling Cut-  
ters, End Mills, Etc.

WE CAN ALSO FURNISH  
DIVIDING ATTACHMENTS.

Send for Literature and Details.

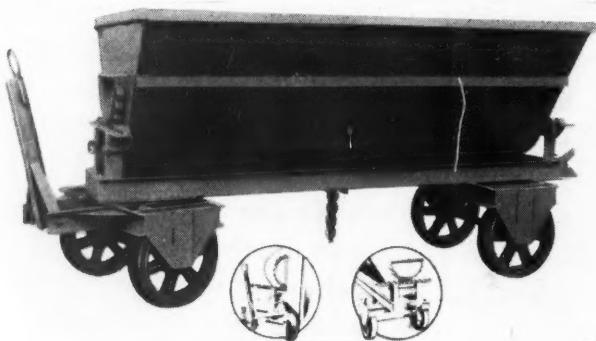
IMMEDIATE DELIVERY

Send For  
200 Page  
Catalog

LAFAYETTE TOOL & SUPPLY CO.  
128 LAFAYETTE STREET

NEW YORK 13, N. Y.

**Palmer-Shile Side Dump  
Trailer Truck**



unit features a heavy gauge reinforced steel body mounted on a substantial structural steel framework. The trailer includes a sturdy 30-inch long pull bar of all-welded construction and is equipped with four 18 x 3½-inch metal roller bearing wheels.

plants for such jobs as collecting, hauling, and dumping rubbish, scrap, gravel, metal shavings, borings, and similar loads. One style of the truck has gear type dumping rockers which are said to assure smooth action dumping, while the other style has an automatic coupler at the rear for train hauling.

With the Palmer-Shile Side Dump Trailer Truck, dumping is controlled to either the right or left side, whichever is desired. Especially engineered for trailering in train and for turning corners, the

## **SEIBERT IMPROVED MULTIPLE SPINDLE DRILLING EQUIPMENT**

Standard slip and bracket type spindles are stocked for immediate delivery.

Made of alloy steel, heat treated and precision ground to an excellent finish.

Write for catalog.



- Arms
- Brackets
- Adapters
- Lower Drives
- Pinion Drive Shafts

### **SPECIAL SPINDLES**

Consult SEIBERT engineers before retooling or replacing.  
Delivery • Price

Quality



Quality

Manufactured by

**Seibert & Sons, Inc.**  
East Peoria 8, Ill.

## **Pannier "Master Marker" No. C-1055-A Universal Marking Machine**

Welding rods, solder bars, short length tubing, and similar ferrous and non-ferrous products of  $\frac{1}{8}$  to 2 inches in diameter can be printed automatically with a motor-driven universal marking machine, designated as the "Master Marker No. C-1055-A," announced by The Pannier Company, 202 Pannier Bldg., Pittsburgh 12.

*Interchangeable  
type and holders  
for every  
marking  
need*



## **NEW METHOD Steel Stamps INC.**

147 Jos. Campau

Detroit 7, U. S. A.



**DRILL THESE HOLES**  
BY A QUICK, EASY, INEXPENSIVE METHOD  
Your business letterhead will bring literature.  
**WATTS BROS. TOOL WORKS**  
Wilmerding, Pa.

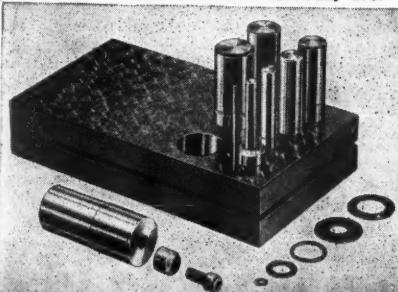
## 60 YEARS MANUFACTURING

Multiple Spindle Drilling and Tapping Machines • Automatic Drilling and Tapping Units • Multiple Spindle Attachable Drill Heads • Hot and Cold Swaging Machines • Hammering Machines • Tools, Jigs and Fixtures • Contract Work • Special Machinery.

**LANGELIER MANUFACTURING CO.**  
Providence 7, Rhode Island

## MAKE WASHERS AND SHIMS

Up to  $\frac{1}{8}$ " Thickness  
IN STEEL—PLASTIC—MICA—RUBBER, ETC.



This handy shim and washer die set pierces the thinnest of shim stock or up to  $1/16$ " through mild steel, without burring. Punch sizes are  $3/16$ " to 1" in  $1/16$ " or  $1/8$ " graduations. 28 washer combinations. Made of high grade tool steel hardened and drawn to withstand shock without breakage. \$39.50 per set. Write for complete specifications. Finished Wooden Case \$4.75 extra.

Distributors Wanted

**DAVIS & LARRICK MFG. CO.**  
Box 191, Route No. 2, Dayton 10, Ohio

# KNURLING PROVIDES THAT

extra FEATURE



(A)



(B)

Pat'd and  
Pat's Pend.



Reg. U.S. Pat. Off.

## SOCKET SCREW PRODUCTS

(A) The KNURLED Cup Point of this "Unbrako" Socket Set Screw—a point that locks, but does not burr—provides an excellent Self-Locking feature—a real "stay-put" Set Screw, if ever there was one... positively will not shake loose, regardless of the most chattering vibration! (B) The KNURLED head of this ubiquitous "Unbrako" Socket Head Cap Screw greatly helps to speed assembly. The KNURLED "gear" right to the fingers, no matter how oily, and a positive slip-proof grip is the result,—no waste motion. Of course, the Internal Wrenching feature provides cost savings in material, weight and space. Sizes available from No. 4 to  $1\frac{1}{2}$ " diameter, in a full range of lengths. "Unbrako" Screw Products acknowledge no superiors in strength.

Write for the name and address of your nearest "Unbrako" Industrial Distributor and your copy of the "Unbrako" Catalog.

Knurling of Socket  
Screws originated with  
"Unbrako" in 1934.

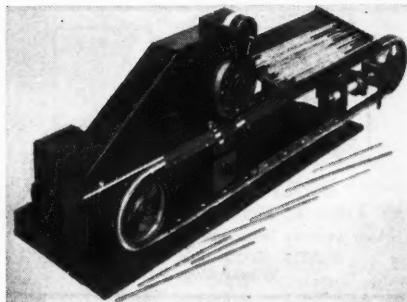
OVER 45 YEARS IN BUSINESS

## STANDARD PRESSED STEEL CO.

JENKINTOWN, PA., Box 556  
Chicago • Detroit • Indianapolis  
San Francisco • St. Louis

Pa. According to the manufacturer, the machine is designed to handle uniform and irregular lengths of stock from 2 to 24 inches and is capable of printing continuously or intermittently as desired at a speed of 72 feet per minute.

Said to print in perfect register, thus correctly making bar recesses, the Master Marker No. C-1055-A is powered by a  $\frac{1}{4}$  h.p. motor and is equipped with a quick-change printing wheel, hopper feed, belt conveyor, automatic interior-feed ink fountain, and adjustments for wear. The printing wheel and conveyor are synchronized. A choice of dovetail rubber



Pannier "Master Marker" No. C-1055-A  
Universal Marking Machine

10 Models  
WRITE FOR CATALOG

# FLYNN

OFFSET  
BORING HEADS

3/8" to 1 1/2" bar capacity. 1/2" to 12" diameter holes. Built-in micrometer offset.

FLYNN MFG. CO.  
437 BATES ST. • DETROIT 26, MICH

High Speed  
**COUNTERBORES**  
**BACK SPOT FACERS**

Interchangeable  
Catalog  
on  
Request

BURKELL-THOMAS COMPANY  
Greenfield Massachusetts

wire dies, quick-set rubber dies, or interchangeable National rubber type is offered.

The Pannier Master Marker No. C-1055-A Universal Marking Machine weighs 220 lb. and is 44 inches long x 14 inches wide x 18 inches high.

### AAF Electro-PL Electronic Air Filter

Identified as the AAF Electro-PL, an electronic air filter with an intermediate cleaning efficiency has been developed by the American Air Filter Co., Inc., 215 Central Ave., Louisville 8, Ky. The filter is basically an electronic precipitator without an ionizing unit and contains a collector element of electrostatically charged Airmat paper. This paper is a laminated cellulose product composed of a number of plies of porous tissue-like sheets formed of short fibers in "jack-straw" arrangement and is also used as a filtering media in mechanical filters. When an electrostatic charge is applied

# BEVEL GEARS

PROMPT DELIVERY  
UP TO 12" DIAM. - 3 D. P.  
CUTTING ONLY or COMPLETE GEARS  
LATEST GLEASON EQUIPMENT

*Greaves* MACHINE TOOL CO.  
BG-2015 Eastern Ave.  
Cincinnati, Ohio

## HAND SPRING WINDER

NO  
LATHE  
NECESSARY



1. Ideal for tool room & maintenance shop
2. Easily operated by hand
3. No lathe necessary
4. Mandrel capacity to 1½"
5. Wire capacity up to .229" diameter
6. Pitch capacity up to 1"
7. Clamps in your bench vice

4 SIZES  
Priced from  
**\$15 to \$35**

DELIVERY ONE WEEK

Write for Complete Catalog

### MONTGOMERY

Machine Tool Accessories

53 PARK PLACE

N. Y. C. 7, N. Y.

## WESTLEN Adjustable Self Centering REELS

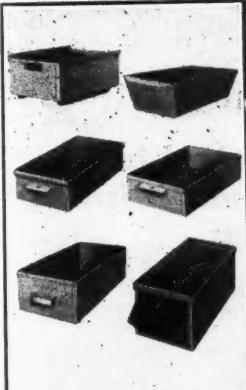
For feeding strip and wire coil stock to presses. Coil capacity 300 to 500 lbs. Outside ring dia., 28" to 36". Height of reel, 36". Wheel automatically adjusts parts to suit inside diameter of coils from 11" to 20". Arm allows for quick conversion to horizontal or vertical position and adjusts height of reel.

Write for prices and literature.



## The RULETA Co.

27 WARREN ST. NEW YORK 7,



## Top Rim STEEL STACKING BOXES

18" x 12" x 6". 16 Ga.  
with Drop Handles

### STANDARD SIZES

- 16 x 10 x 6.....18 Ga.  
16 x 10 x 6.....16 Ga.  
18 x 12 x 6.....16 Ga.  
18 x 12 x 8.....16 Ga.

MADE IN OTHER SIZES

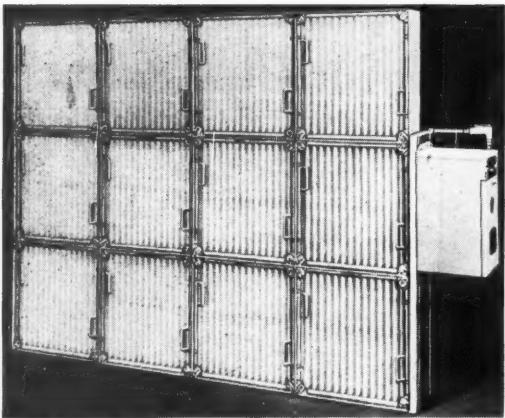


### WE MANUFACTURE ALL TYPES OF STEEL BOXES

We make a specialty of boxes made to fit your particular handling requirements. Special boxes designed so they can be run thru with standards enable us to quote prices comparable with that of a standard box.

**STERLING**  
FACTORY EQUIPMENT CO.

183 CHARLES ST.  
PROVIDENCE, R. I.



AAF Electro-PL Electronic Air Filter  
(Straight Bank Arrangement Size)

months when a smoky atmosphere is prevalent and as a dry-type air filter during the summer months. Maintenance is said to be simplified since the Airmat paper is replaceable with new material when it has accumulated its full dust load.

### Merz New-Tronic Gages and Ball Sorting Machine

The Merz Engineering Co., Indianapolis, Ind., has acquired exclusive patent, manufacturing, and sales rights to the Jack & Heintz electronic inspection equipment, which will now be marketed under the designation of Merz New-Tronic. Three types of New-Tronic equipment are available; namely, comparator, height gage, and ball sorting machine.

The Merz New-Tronic Comparator is intended for external measurements and

to the paper, the plies tend to separate and each individual fiber becomes a collecting electrode which attracts and holds dust and smoke particles.

Since the Electro-PL is said to continue to function as an efficient air filter when de-energized, its operation may be varied to suit the dust conditions—as an electronic air cleaner during the winter

# PRENTISS

TOOL ROOM  
**VISES**

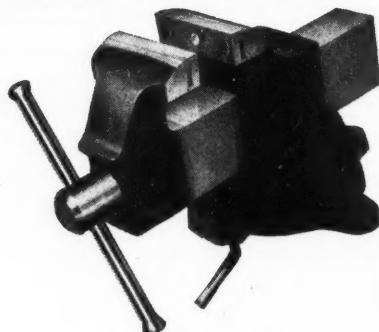
To hold irregular pieces. With taper pin removed, back jaw swivels as vise is screwed up on work. With Taper pin inserted, it becomes a regular vise.

Your Industrial Distributor  
can furnish.

**PRENTISS VISE DIVISION**  
OF THE CHARLES PARKER CO.



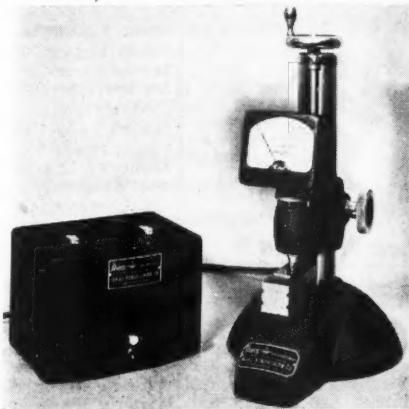
**Top Swivel Jaw  
Service That Satisfies**



MERIDEN, CONN., U. S. A.

is available in four models with fixed or adjustable work-contact pressure. All models are equipped with two magnification scales. The "A" scale provides a range of plus or minus 3/10,000ths in graduations of ten-millionths. The "B" scale has a range of plus or minus 3/1,000ths, calibrated in one ten-thousandths. All models have identical methods of operation.

The Merz New Tronic Height Gage is furnished complete with a stand that is equipped with fine adjustment for speed and convenience in operation as a height gage, a comparator, for checking concentricity or setups on machine tools, and so on. As an added feature, the gag-



Merz New-Tronic Comparator

ing head mounting is provided with a standard A.G.D. lug, thus making the unit readily adaptable for use with existing fixtures. The unit has the same range and scale calibrations as the Merz New-Tronic Comparator.

The Merz New-Tronic Ball Sorting Machine is available in two standard models. The Model A is designed to handle balls ranging from  $\frac{1}{8}$  to  $\frac{1}{2}$  inch in graduations of  $\frac{1}{16}$  inch, making ten selections to an accuracy of 10, 20, or 50 millionths of an inch at a rate of 3,600 balls an hour, it is claimed. The Model B is designed to handle balls in graduations of  $\frac{1}{8}$  inch within the range of  $\frac{1}{8}$  to  $\frac{1}{2}$  inch, sorting them to accuracies of 20, 50, or 100 millionths of an inch, it is stated. Both models are fully automatic. To handle balls of other sizes within the  $\frac{1}{8}$  to  $\frac{1}{2}$ -inch range, special shims can be furnished for any increment.



#### Swell news for METAL FINISHERS AND GRINDERS!

That Michigan Red Coat means—  
SHARPER-CUTTING, CLEANER-CUTTING AND LONGER-LASTING ABRASIVE DISCS FOR YOU!

Why?

Because that Red Coat comes from a special process which covers each grain with a new tough sharp surface—

A surface which enables you to see the difference and tell the difference.

Try Michigan Red Coat Discs today!

(If you can't get Michigan Red Coat Discs, mail us this ad and your address.)

*Plus—*

#### BELTS, ROLLS AND SHEETS

Michigan Abrasives are supplied in Belts, Discs, Rolls, Sheets—paper or cloth backed—in Silicon Carbide, Aluminum Oxide, Garnet—in full range of standard grit sizes.

MICHIGAN ABRASIVE CO.  
1111 BELLEVUE AVE. • DETROIT 7, MICH.

**Michigan  
COATED  
ABRASIVES**

## Hilco Steel Shelving

A line of steel shelving comprising both open and closed type shelving units is now being offered by the Hilco Manufacturing Co., 1721 Elston Ave., Chicago 22, Ill. The units are available in shelf sizes of 8 x 24, 8 x 30, 8 x 36, 12 x 24, 12 x 30, 12 x 36, 18 x 36, and 24 x 36 inches, and include high carbon angle uprights 1 x 1 x  $\frac{1}{8}$  inch in lengths from 37 $\frac{1}{2}$  inches to 10 feet 1 $\frac{1}{2}$  inches. Holes are punched on 1 $\frac{1}{2}$ -inch centers.

The Hilco Steel Shelving Units have a standard olive green color, with other

colors available on order, and are designed to support loads from 100 to 150 lb. per shelf. Card and ticket holder strips in lengths from 6 to 30 inches are available for labeling articles on shelves. Special shelving units can be made to order.

## Supersonic Reflectoscope Type SR05

Production of the Supersonic Reflectoscope Type SR05 is announced by Sperry Products, Inc., 1505 Willow Ave., Hoboken, N. J. Intended for the non-destructive testing of metals and other materials for internal defects, as well as for testing welds, the instrument includes specifications matching those of the model presently in use; however, radical changes have been made in the size, appearance, and operation of the instrument.

According to the manufacturer, elimination of waste air space and a complete redesign of circuits are responsible for the increased weight and bulk of the Type SR05 Reflectoscope. The Type SR05 is approximately 14 x 16 x 23 inches in size and can be carried by means of handles on the case, thus eliminating the wheeled carriage which supported the older instrument. The overall weight of the Type SR05 is approximately 85 lb. or about half the previous weight.

**SECOMET DIAMOND**

Here's a worth-while investment. Impregnated with carefully selected diamond grains of uniform size, insuring perfect finish with maximum efficiency, "Secomet" Diamond Wheels remove in the same time and at greatly reduced cost, five to six times the amount of carbides or hard metal that could be removed with a silicon carbide wheel.

Catalog on request.

**J. K. SMIT & SONS, INC.**

157 Chambers St., New York 7, N. Y.  
6400 Tireman Ave., Detroit 4, Mich.  
129 Adelaide St. West, Toronto, Ont.

## THOMPSON'S OPEN-SIDE GRINDING WHEEL DRESSER



This Modern Wheel Dresser operates on a resilient bushing. It offers lower initial cost, sharper tools and a smooth shock-proof dressing action. Write for complete details. You should have one by each grinder.

**THOMPSON MFG. CO.** P.O. Box 627  
Erie, Pa.

## High Speed Cutting Tools

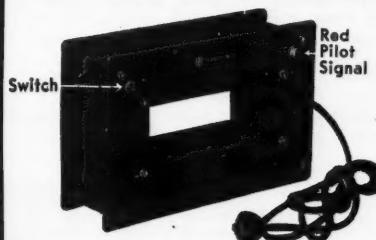
- Special high speed circular, dovetail, flat form and special tool bits.
- Design and manufacture of small machines, jigs, gages and experimental parts.
- Regrinding and salvaging high speed flat form, special bits and small flat broaches.

Write for quotes.

### Attractive Proposition for Representatives

**LINCOLN PARK MANUFACTURING CO.**  
3304 Dix Road Lincoln Park, Mich.

## AMC Quick DEMAGNETIZER



A necessity where machine tools are used.

Standard units available and special sizes to order.

Write today for descriptive circular.

## ALOFS MFG. CO.

1622 Madison, Grand Rapids, Mich.



Variable Speed Motors



Flexible Shaft Units



Air-Feed Drill Heads



Sensitive Drill Presses



Multiple Head Drills

# New!

## It's the GOVERNOR CONTROL Speed-Right Flexible Shaft

### CHECK THESE IMPORTANT EXCLUSIVE FEATURES

- ✓ Variable Governor Control Motor delivers constant desired speed under heavy load or while idling.
- ✓ Sturdy Heavy Duty Ball-Bearing Motor powers the flexible shaft at any speed required from 1000 rpm to 10,000 rpm.
- ✓ Instant-set Smooth Efficient Power for stock removal and polishing of all materials hard or soft.
- ✓ Handpieces For All Types of Work
  - Ball-Bearing • Chuck • Small Pencil • Collet • Reciprocal Filing • Hammer Peening.

Write for Bulletin 306

### DO IT RIGHT WITH

# Speed-Right

**THE ELECTRO-MECHANO CO.**

261 EAST ERIE STREET  
Milwaukee 2, Wisconsin



The sensitivity of the instrument is said to remain the same, however, the operation has been considerably simplified by reducing the number of external controls to five. With these controls, the operator can vary sensitivity, pulse width, sweep length, screen markers, and frequency. Visual indication of internal defects remains unchanged on the oscilloscope screen, but the tube is a smaller, 5-inch high-intensity type.

The Supersonic Reflectoscope Type SR05 is claimed to not only facilitate the testing of manufactured products from



Supersonic Reflectoscope Type SR05 in Use

**V-Speed**  
AIR-POWERED

**VAN PRODUCTS CO.**  
134 G. D. BALDWIN BLDG.  
ERIE, PENNA.

- FAST RUGGED
- HOLDING PRESSING PUNCHING
- SIMPLE DESIGN
- 8 MODELS
- Guaranteed
- WRITE FOR CATALOG

raw material to finished stage, but the increased portability inherent in the new design makes it particularly adaptable for the field testing of welds in tanks, pipe, and various structures, and for locating fatigue cracks in assembled plant equipment.

### AUTOMATIC CHUCKING AND INDEXING FIXTURE

- 1.—1800 light cuts per hour.
- 2.—Either horizontal or vertical position.
- 3.—Collets changed instantly.
- 4.—Automatically knocks piece out.

Model D—Ratchet indexing only—1" cap.  
Model E—Both degree and ratchet indexing  
—Capacity up to 1".

Model F—Both degree and ratchet indexing  
—Capacity up to 2 1/4".

Write for Folders

**J. W. DEARBORN • Ansonia, Conn.**

### Porter-Cable Improved Model FT-9 Automatic Feed Table

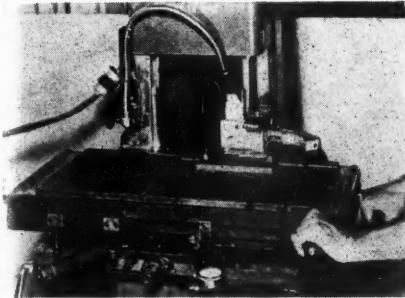
An improved automatic feed table, designated as the Model FT-9, is now available for the Porter-Cable Model BG-8 wet abrasive belt grinder. According to the manufacturer, Porter-Cable Machine Co., Syracuse 8, N. Y., the redesigned table provides for greater precision and a smoother approach for feeding work into the grit belt than heretofore. With the table, practically any material may be ground and polished to a close tolerance.

Earlier models of the FT-9 table used the same oil-coolant in the recirculating

For  
Fast, Accurate  
Metal-Cutting  
Use

**KENNAMETAL** CEMENTED CARBIDE  
TOOLS, BLANKS, and MILLING CUTTERS

**KENNAMETAL Inc.**  
LATROBE, PA.



Porter-Cable Improved Model FT-9 Automatic Feed Table in Use

system of a hydraulic liquid for the feed table. Two separate systems have now been installed. Special coolants may be used for various materials, while the table is independently operated by a standard hydraulic oil. In addition, a rod has been added to the former free piston, with a gland at the end of the cylinder oil shield to assure a smooth, positive action at all times.

The FT-9 table is designed to automati-

cally control the pressure and rate of feed, while a dial indicator shows the rate of machining. A micrometer stop halts the operation, the stop being arranged for instant resetting. Additional manual controls permit a wide variety of applications. The design of the table includes T-slots for holding fixtures.

### Erwood V-425 Milling Machine and Drill Press Vise

Designated as the V-425, a swivel base milling machine and drill press vise which is said to fill the need for an accurately made vise to meet the exacting requirements of toolroom, model, and machine shops is now being marketed by The Erwood Co., 214 Woodstock St., Crystal Lake, Illinois.

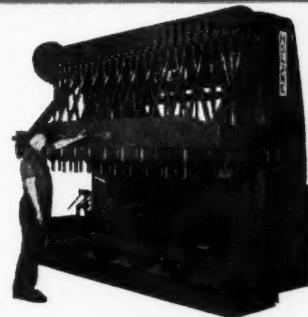
Rigidly constructed to reduce chatter and assure long cutter life, the vise includes a base and body cast from semi-steel; all surfaces not machined are provided with a baked wrinkle finish. The swivel base is calibrated for 90-0-90 deg. (180-deg.) rotation and is provided with four slots for use in properly fastening the vise to the machine. The vise has a jaw width of 4 inches and is equipped

- ★ At greater Man-Hour SAVINGS
- ★ At higher rated EFFICIENCY
- ★ At finer, effortless PRECISION

A Moline Multiple Spindle Specially Designed Machine Tool can do your job better at less cost. Ruggedly built to fit your INDIVIDUAL requirements in such operations as Boring—Straight Line Drilling—Universal Adjustable Spindle Drilling—Honing—Tapping—Reaming—Counterboring—Special Milling—these machines are based on years of experience accumulated since 1901.

For your SPECIAL problem go "Hole-Hog" and write us for any information you may need.

No. HUGG DRILLER



**MOLINE TOOL COMPANY**  
100 20th Street      Moline, Illinois

## SCHERR aids to precision — production

### SCHERR MICROMETERS have vernier reading to 1/10,000



at no extra cost, in 1", 2", and 3" sizes. This is right in step with modern demands for higher accuracy. Available in sizes up to 96". All Scherr micrometers have solid forged frames; easy reading graduations on thimble and vernier; longer life and more sensitive touch due to a burnishing process which compresses and polishes the surface of the thread; such refinements as ratchet stop to control the measuring pressure, and decimal equivalent markings on frame or barrel. Prices, 1", as shown, \$11. 2", (black frame), \$9.50. 3", \$10.25. Write for bulletin and order the micrometers you need now.

### Measure depth easily with these DEPTH MICROMETERS

Made with 2½" and 4" base. Each instrument furnished with three interchangeable rods, to measure depth to 1", 2", or 3". With or without ratchet. A handy tool that can save its cost in a single precision job. Price, with ratchet, 2½", \$10. 4", \$11.25.



### An invaluable inspection tool —

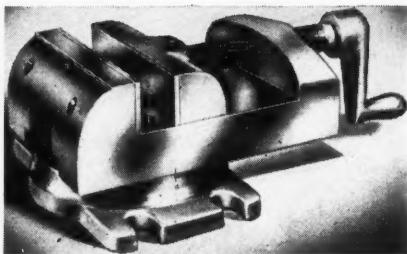


**THE SCHERR MAGNI-RAY**  
Magnifies the work under inspection, floodlights it as well, and gives the immense advantage of "two-eye seeing." No wonder thousands of Magni-Rays are serving in large inspection departments, and other thousands on precision machines or critical toolroom operations. The lens is ground by experts for true magnification. Heavy base permits swinging lens to any position, any height to 14 in. Three types—Model A, 3" lens, 1½x plus, \$21.65. Model B, 3x plus, \$29. Model C, 5" lens, 1½x plus, \$34.

Write for full details on these tools, and for the Scherr Small Tool Catalog.

**GEO. SCHERR CO., Inc.**

198-A Lafayette St. New York 12, N.Y.



Erwood V-425 Milling Machine and Drill Press Vise

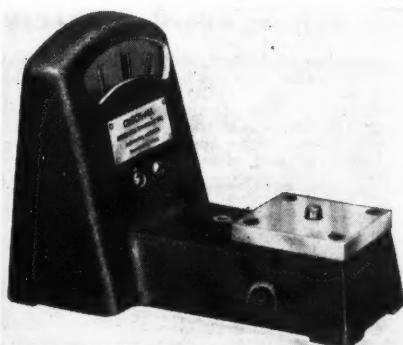
with jaws having hardened steel plates which are replaceable. The maximum jaw opening is 2½ inches and the jaw depth is 1 inch. The clamping screw is made of heat-treated steel and is provided with a semi-steel handle.

If desired, the Erwood V-425 Milling Machine and Drill Press Vise can be furnished without a swivel base.

### "Check-All" Gage

Known as the "Check-All," a simple comparator gage that is designed to handle a wide variety of work is now being marketed by Roper & Broderick, Inc., 1694 Main St., Springfield, Mass. By changing the plate and pin and setting with masters, the gage can be used to check many dimensions on the same parts or different parts. According to the manufacturer, the gage provides a multiplication of approximately 200 to 1 and will check up to plus or minus 0.010-inch tolerance. A standard hardened steel drill

"Check-All" Gage



**Lyon-Raymond Power Operated  
Hydraulic Pump**

bushing is used to guide the gage pin, which is replaceable in case of wear.

The Check-All Gage can be used in gauging depth of counterbores, valve seats, length of shoulders, depth of a counterbore with center of part, hole location, concentricity of hole with O.D., depth of drilled holes, depth of centers, concentricity between two outside diameters, shoulders, undercuts, diameter of undercut, and so on.

**Lyon-Raymond Power Operated  
Hydraulic Pump**

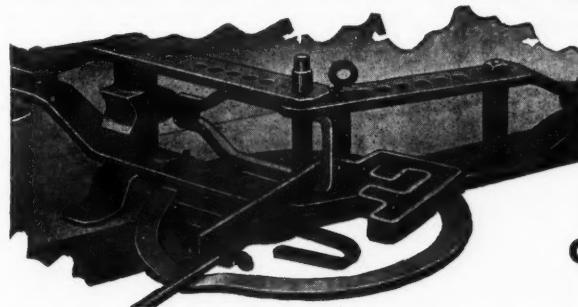
The Lyon-Raymond Corp., 5866 Madison St., Greene, N. Y., has designed a package type hydraulic power unit that is said to deliver 1½ gallons of oil per minute and develop a pressure of 1,000 p.s.i. Compactness is obtained by the use



of a flange mounted motor which is placed directly on top of the oil reservoir. Although the reservoir has an oil capacity of 2½ gallons, the entire pump assembly is only 18½ inches high x 12½ inches in diameter.

The unit is furnished with all controls and is ready for operation as soon as the pressure line is connected and the electric cable is plugged into a standard outlet. Since all controls are electric, the pump can be operated from remote positions if desired. A  $\frac{1}{4}$  h.p. a.c motor is

## Let The Hossfeld Universal Iron Bender Solve Your Bending Problems



Patented  
In  
U. S. and Canada

Bending  
Ornamental  
Iron Work

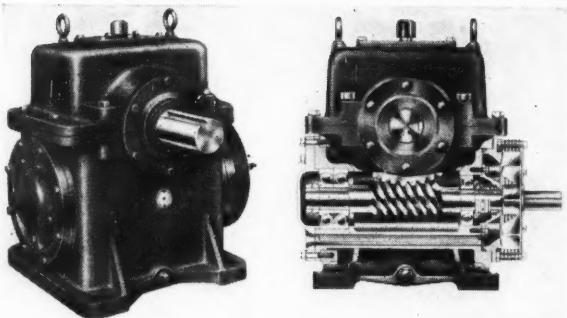
Write for Details

**Hossfeld Manufacturing Company**  
**452 West Third Street**      **Winona, Minnesota**

Foote Bros. Horizontal Type  
"Hypower" Enclosed Worm  
Gear Drive

used, the motor being available for 110, 220, or 440-volt service. The valves utilize an "open center" arrangement which permits the motor to idle except when the unit is pumping oil to the pressure line. Two controls are regularly furnished—a main starting switch and a push-button operating switch. A foot control switch is optional. An adjustable relief valve and the electric control valves are built into the base of the unit so that they are accessible by tilting the assembly slightly.

The standard unit is furnished with a 3-way valve for operating a single-action hydraulic cylinder. Four-way valves for operating double-action cylinders are available. Various combinations of motors, pumps, and controls can be furnished, as well as various styles of hydraulic cylinders, to provide for a wide variety of possible uses.



### Foote Bros. "Hypower" Enclosed Worm Gear Drive

Foote Bros. Gear and Machine Corp., 4545S. Western Ave., Chicago 9, Ill., announces the introduction of an enclosed worm gear drive known as the "Hypower." Outstanding features claimed for the drive include unusual load-carrying capacity accomplished by means of a new technique in generating gears; high thermal capacity due to the immersion in the oil reservoir of an air channel cylinder through which passes a high velocity

## NOW... → TRIPLE SAVINGS



### IN YOUR GRINDING ROOM

#### HERE'S HOW WITH THE STANDARD BDG:

- 1—Wheel costs are lowered!
- 2—Time is saved!
- 3—Production is increased!

Standard's belt driven grinders reflect correct peripheral speeds on wheels at all times down to wheel flanges. Cut grinding room costs today! Write for catalog 44. Belt driven grinders from 1 H.P. to 60 H.P.

**THE STANDARD ELECTRICAL TOOL CO.**

2487 RIVER ROAD

•

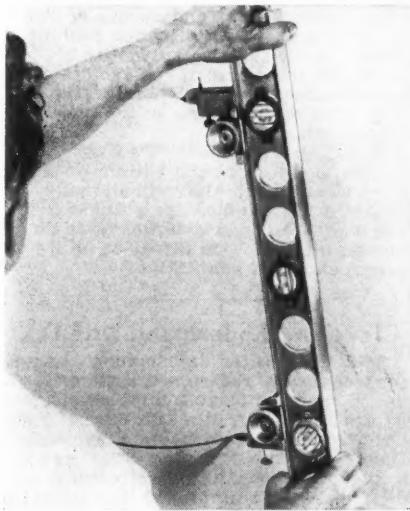
CINCINNATI 4, OHIO

stream of cool air; elimination of oil leakage by the use of a carbon lapped ring type seal; small size and lightweight.

The Foote Bros. Hypower Worm Gear Drive is available in horizontal and vertical types in a wide range of standard ratios to meet practically any need. The unit complies with A. G. M. A. and N. E. M. A. speed-ratio standards.

### Trammel Points for Schultes Levels

Said to be particularly useful in laying out circles, spacing holes around a circle, and spacing two-by-fours or joists,



Schultes Level Equipped with Trammel Points

trammel points which may be readily attached to Schultes levels are now being offered by Schultes Level, Inc., 17403 Gable Ave., Detroit 12, Mich. The points are also claimed to be of particular use to draftsmen as a substitute for a beam compass in making larger type drawings.

One of the points includes a mechanism for fine adjustment. Both points are made of aluminum.

### Knu-Vise Model P&P-800 Clamp

Designated as the Knu-Vise Model P&P-800, a push-and-pull type clamp intended for use in places where space is

## TAPPING TIPS

From Woody Spencer's Notebook

### HEAVY FEET AND HEAVY HANDS GET US ALL IN TROUBLE . . .



Drivin' along with the missus the other Sunday afternoon, I was kinda dreamin'. I guess an' my wife says, "Woody, ain't your foot sorta heavy? How often have I heard you tellin' the boys on the tappin' machines, 'don't bear down so hard'." She had me there. Don't s'pose any one thing causes more trouble, oversize an' bell mouth holes than too much pressure startin' the tap. Jes' let the tap go—it'll find its own lead. Then it'll thread true an' you'll get pretty, well tapped holes every time.



The individual problem that comes up with almost every tapping job requires a specific engineering solution. So, if you will send us complete information on the job (material, depth, pitch and diameter, lubricant, etc.) our engineers will be glad to make recommendations without obligation.

Note—Woody Spencer's *Tapping Tips* will appear here as regularly as "Woody" gets time to write them up. Look for them.

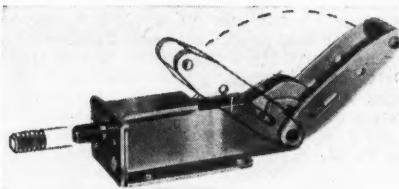


THE RIGHT TAP AT THE RIGHT TIME

*The Wood & Spencer Company*  
Cleveland 3, Ohio

limited or under circumstances where the operating handle cannot be accommodated except at some distance from the point of pressure application is announced by the Lapeer Mfg. Co., 3056 Davison Rd., Lapeer, Mich. The clamp is also said to be useful where the plunger must travel under load either pushing or pulling rather than creating pressure merely at the end of the stroke.

According to the manufacturer, the Knu-Vise Model P&P-800 Clamp is designed to exert up to 800 lb. pressure with normal hand operation in either the push or the pull movement of the handle, the

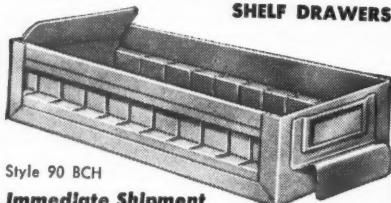


Knu-Vise Model P&P-800 Clamp

clamp being automatically locked and the work held firmly upon completion of the handle swing. The unit, with the plunger at either extreme, can be used for holding parts on a milling machine, drilling machine, cut-off saw, and so on, or it can be used to exert a continuous pushing or pulling motion during the entire 1½-inch travel of the plunger. To facilitate the performance of such operations, auxiliary holes are provided in the handle for extensions.

The Knu-Vise Model P&P-800 Clamp can be mounted on the bottom or on the front at any angle that will allow for free swing of the handle. The plunger is provided with both an external ¾-24 thread and an internal ¼-28 thread to afford the user a choice of adaptation.

### STEEL ADJUSTABLE COMPARTMENT SHELF DRAWERS



Style 90 BCH

#### Immediate Shipment

Ideal for handling and storing small quantities of small parts. Boxes slotted on 1" centers to accommodate dividers. Label holder on front for easy identification of contents. Pull handles on front only. Drawers finished in baked green. Dividers furnished at slight extra cost.

#### Other Sizes and Styles Available

91 BCH	5 ½ x 11 ½ x 2 ½	Green Finish.....	.92c ea.
92 BCH	5 ½ x 17 ½ x 2 ½	Green Finish.....	1.06 ea.
93 BCH	8 ½ x 11 ½ x 2 ½	Green Finish.....	.99c ea.
94 BCH	8 ½ x 17 ½ x 2 ½	Green Finish.....	1.18 ea.

#### Send for Catalog

All Prices F.O.B. Philadelphia Plant  
Phone — Wire — Write

Telephone BALdwin 9-1805

**BAY INC.** 3015 North 16th St.  
PHILADELPHIA 32, PA.

#### SOMETHING NEW . . .

### TRUE CENTERS TRANSFERRED Instantly

#### WITH UNIVERSAL TRANSFER PUNCH

No Layout, Measuring or Scribing required—Automatically centers and squares itself with finger tip pressure.

(3 Sizes:  $\frac{1}{8}$  x  $\frac{1}{2}$ ",  $\frac{3}{16}$  x  $\frac{3}{4}$ " and  $\frac{1}{4}$  x 1")

Tool Specialty Salesmen Wanted

**Universal Transfer Punch, Inc.**

Dept. M, Box 412,

Massillon, Ohio





Cleveland Redesigned Drill Drift

the enlarged end and also retards mushrooming due to the added metal at the head. In addition the enlarged end is said to prevent the drift from flying through the spindle slot, and the ears provided permit the drift to be easily picked up. The drift is provided with a hole so that it may be chained to a machine or hung on a wall.

### Edgemont V-Belt Pulley Clutch

Unusually quick release, minimum wear on V-belts, smooth starting, easy take-up for wear, and unusual compactness are features claimed for a clutch with integral V-belt pulley announced by The Edgemont Machine Co., 2137 Home Ave., Dayton 1, Ohio. Intended for application in motor powered mowers, lawn sweepers, road markers, cultivators, small portable conveyors, and special machinery using V-belt or chain drives, the clutch is furnished in ratings of  $\frac{1}{4}$  and  $\frac{1}{2}$  h.p. at 100 r.p.m. and in shaft sizes from  $\frac{3}{8}$  to  $1\frac{1}{4}$  inches. The unit is available from stock with a V-belt pulley having one V-groove of  $3\frac{1}{2}$ ,  $4\frac{1}{4}$ , or 5-inch P.D. or two V-grooves of  $4\frac{1}{4}$  or 5-inch P.D. Special V-belt pul-

leys or adapters for mounting sprockets or gears can be readily obtained.

When the clutch is disengaged, the pulley operates freely on its shaft. To engage the clutch, a steel cam, induction hardened, moves two drop forged levers which, in turn, move a friction plate axially against the liner, thus engaging the pulley, which is restrained from axial movement by an adjusting collar. A snap ring on the adjusting collar engages with notches on the rim of a steel washer keyed to the clutch body, and thus take-up for wear is effected by a positive "indexed" adjustment.

The advertisement features a large, stylized title "The TRANS" in a jagged, torn paper font, with a coiled spring graphic to the right. Below it, the word "GUN" is written vertically, followed by "TYPE" and "SAW" horizontally, all in a bold, sans-serif font. A black-and-white photograph of a "Gun Type Saw" is shown, angled diagonally. The saw has a long, thin blade attached to a handle with a trigger mechanism. To the right of the saw, there is descriptive text and a smaller inset box.

**twice the power on the cutting stroke due to a special gearing arrangement.**

**Special guides for each width of saw blade eliminate whipping, turning or cracking the blade, and acts as a cutting guide at the same time.**

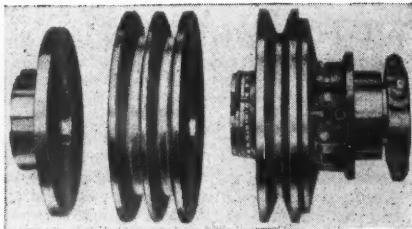
**Transa guns are used extensively in machine shops, assembly plants, fabricating industries, repair and shipping departments.**

**At last, a saw which cuts anything, stainless steel, rubber, wood, aluminum, etc. Blade has a variable speed which is set in 45 seconds . . . the stroke length of the blade is adjustable depending on thickness of materials. Transa has**

**Write for free bulletin.**

**TRANSA INC.**

440-45 Gateway Bldg.  
Minneapolis, Minnesota



(Right) Edgemont Clutch with Single V-Belt Pulley (Left) Adapter Plate and Double Pulley Which Can Also Be Assembled with the Clutch

When the cam is moved to disengage the clutch, centrifugal force on the levers tends to remove the force on the friction plate, thereby making release fast and positive, it is claimed. Self-lubricating bushings are used in both the pulleys and adapters.

### New Cartons for Airco Products

The Air Reduction Sales Co., 60 E. 42nd St., New York 17, N. Y., has announced the adoption of a colorful new

set of boxes and cartons for the packaging of Airco welding torches, tips, cutting attachments, regulators, and other products. The purpose of the orange and black containers is to afford maximum protection to the products, provide for more efficient stock control, permit quick inventory taking, and facilitate handling.

Each product is packaged in an individual box, clearly marked by product name and stock number. This information appears on one end of the box so as to permit easy identification.

### Howald Replaceable Blade Carbide End Mill

The W. T. Howald Machine Works, 182 Sigourney St., Brooklyn 31, N. Y., announces the addition of a carbide end mill with replaceable blades to its line of carbide end, face, and shell milling cutters. Especially designed for production milling, the end mill is available in diameters of  $1\frac{1}{2}$ , 2, and 3 inches and has, as an integral part, a No. 40 N.M.T.B., Weldon or Brown and Sharpe No. 9 shank.

The replaceable carbide-tipped blades are made of standard square stock without serrations, grooves, and so on. The

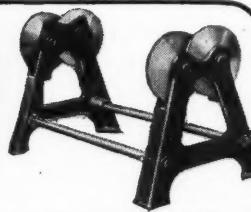
### SELECT THE BEST... Balancing Tool for Your Work from Sundstrand's Complete Line

Here's a complete line of Balancing Tools which will save their cost quickly on balancing or truing operations. Accurately sensitive and durable, they provide a simple, reliable means for checking the balance of parts like gears, shafts, fly wheels, pulleys, etc. The standard sizes available are shown in capacity chart at right.



#### FREE ADDITIONAL DATA

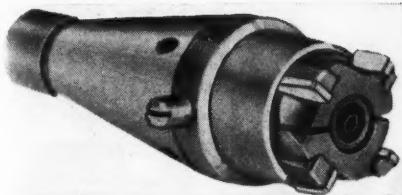
You can obtain complete information on Sundstrand Balancing Tools by writing for bulletin No. 577.



#### CAPACITIES

Swing	Between Standards	Weight Capacity
21 in.	20 in.	12 lbs.
21 in.	20 in.	800 lbs.
43 in.	29 in.	800 lbs.
43 in.	29 in.	2,000 lbs.
6 ft.	5 ft.	5,000 lbs.
8 ft.	8 ft.	10,000 lbs.
Any	Any	24,000 lbs.
43 in.	30 in.	800 lbs.

**SUNDSTRAND**  
**MACHINE TOOL COMPANY**  
2539 Eleventh St. Rockford, Ill., U.S.A.



Howald Replaceable Blade Carbide End Mill

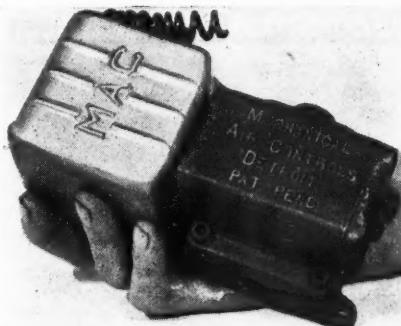
unique "cone blade lock" feature of the tool permits rapid adjustment of the blades to within a few thousandths of an inch, thereby minimizing cutter grinding and also reducing set-up time to a minimum.

### "Mac" Four-Way Solenoid Air Valve

A four-way solenoid air valve for the control of double-acting cylinders is now being marketed under the trade name of "Mac" by Mechanical Air Controls, Inc., 3049 E. Grand Blvd., Detroit 2, Mich. According to the manufacturer, the design incorporates the ease of operation of the balanced type valve and the "seal with air pressure" feature of the poppet type valve.

Simple in construction, the Mac Four-Way Solenoid Air Valve has one moving or wearing component consisting of two small "O" rings assembled on an alloy piston. The "O" rings are said to provide positive seals in conjunction with hard chrome seats which are integral with the bronze body. Claimed to eliminate the

"Mac" Four-Way Solenoid Air Valve



## TODAY'S METAL CUTTING REQUIRES GOOD CUTTING FLUID



says...  
**"CHIP" WRIGHT**

Material shortages and other unusual postwar conditions emphasize the need for sound cutting fluid practices. Uncontrollable changes in material quality call for cutting fluids with wide latitudes and broad tolerances. In such cases, the smart thing is to call on the broad, practical experience of established cutting oil people. They have the technical knowledge and facilities to apply their "know how" to your job.

*Chip*

An Economical Solution  
**SUPERKOOL**

Base Cutting Oil

Available already correctly mixed, SuperKool eliminates on-the-job mixing . . . makes possible worthwhile economies in time, labor and money. For recommendations of SuperKool mixes, consult a Stuart service engineer.



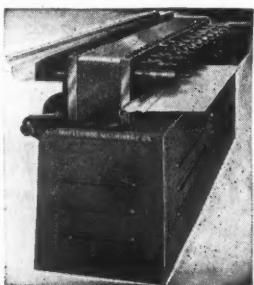
**D.A. Stuart Oil Co.**  
Established 1872

2741½ South Troy St., Chicago 23, Illinois

need for gland packing, the alloy piston and "O" ring component can be quickly replaced by simply removing four cap screws.

Although very small and compact, the Mac Air Valve, due to its full  $\frac{3}{8}$ -inch orifice together with a straight-through flow feature, is said to minimize pressure drop through the unit. Restriction of exhaust is claimed to have no effect on the operation of the valve, which features direct solenoid control utilizing 2.4 amperes at 220 volts to assure immediate and fast operation for any air application.

## Roll Forming Machines and Roller Dies



Also Pittsburgh Lock Machines, Pipe and Elbow, Beading, Turning Machines and all other Sheet Metal Working Machinery—

Your inquiries invited.

**Maplewood Machinery Co.**  
2636 Fullerton Ave., Chicago, Illinois

## PEERLESS ABRASIVE BELT SURFACER

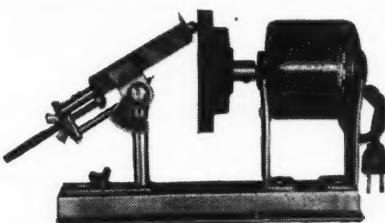
Speed and quality in grinding flat surfaces of metal, wood, hard rubber, celluloid and plastics. Obtainable in both vertical and horizontal types—9", 14", 20" sizes.

SEND FOR ILLUSTRATED PAMPHLET.

*Production*  
MACHINE COMPANY GREENFIELD, MASSACHUSETTS U.S.A.

## E Z Drill Grinder

A drill grinder which is said to provide for the sharpening of the average drill to exacting industrial standards in 30



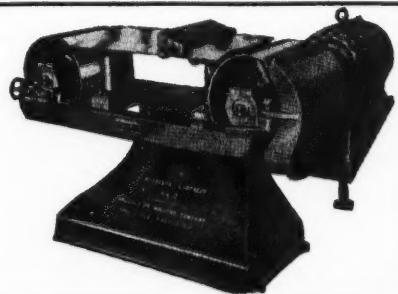
E Z Drill Grinder

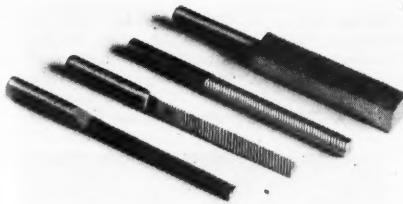
seconds is announced by the E Z Manufacturing Co., 4408 San Fernando Rd., Glendale 4, Calif. The grinder is supplied complete with a protractor fixture and adjustable spacer that is adjustable to various length drills. The motor is mounted on a lightweight sturdy metal base for ease of installation and handling.

## Severance Ground Carbide Die-Machine File

With the Severance Ground Carbide Die-Machine File now being marketed by Severance Tool Industries, Inc., 724 Iowa St., Saginaw, Mich., alterations or corrections on hardened dies (as hard as Rockwell 63C) can be readily made, it is claimed. The file can be used in die-making, finishing parts, templets, production pieces, toys, and on most any material where a relatively straight surface is to be worked.

The Severance Ground Carbide Die-





#### Severance Ground Carbide Die-Machine Files

Machine File is offered in several sizes in four standard shapes; namely, round, square, rectangular, and triangular. The file is recommended chiefly for use on die-filing machines, but can be used manually or in practically any reciprocating device or manner.

#### Ipcō "Speed-Up" Safety Vacuum Lifter

Designed for lifting, feeding, and positioning sheets of metal and other materials in stamping machines and die presses, the Ipcō "Speed-Up" Safety Vacuum Lifter shown in the accompanying illustration has been placed on the market by the Industrial Products Co., 2999 N. Fourth St., Philadelphia 33, Pa. According to the manufacturer, the lifter eliminates danger to the operator while positioning blanks in forming presses since it can be used to accurately set work-pieces to gages or stops without in-

serting hands or fingers in the danger zone.

Time-saving and practical in transferring metal blanks from piles or stacks, especially when oily or greasy and when difficult to grasp with the fingers, the Ipcō Speed-Up Safety Vacuum Lifter may be used with equal success on other non-porous materials, as well as blanks of curved contour, fiber, tinplate, plastic, linoleum, and other rigid materials, it is claimed. The lifter is employed by striking the rubber cup against the material to be handled. This action produces a vacuum within the cup which is said to be retained until the cup is released by depressing a conveniently lo-

#### AMAZING all-purpose ELECTRIC TOOL will

- Drill up to  $\frac{1}{4}$ " dia.
- Ream up to  $\frac{1}{4}$ " dia.
- Tap up to  $\frac{1}{2}$ " dia.
- Run Nuts up to  $\frac{9}{16}$ " dia.
- Drive Screws up to  $\frac{5}{8}$ " dia.
- Hole Saw up to  $\frac{1}{2}$ " dia.
- Bore Wood up to  $\frac{7}{8}$ " dia.
- Drive Studs up to  $\frac{5}{8}$ " dia.
- Drill Masonry up to  $\frac{3}{8}$ " dia.
- Extract Broken Studs up to  $\frac{3}{8}$ " dia.
- Wire Brush up to  $\frac{3}{8}$ " dia. shanks.  
(Inca Standard Attachments  
(110 V or 220 V Models available)

The tremendous power of the "rotary impacts" performs a multitude of operations not possible with any other electric tool. What's more remarkable—there is no kick—no twist to the operator.

The IMPACT Tool is the greatest labor-saving, time-saving portable power tool ever offered. It will save up to 90% of the time on nut running operations alone.

Call your Distributor now for a demonstration of this amazing all-purpose electric tool. They're available for immediate delivery.

**Ingersoll-Rand**

11 BROADWAY, NEW YORK 4, N.Y. 239-18

## SPEEDMILLER

**Universal  
Milling  
Heads**



Cuts the Cost  
of Milling,  
Boring and  
Profiling, all angles.  
Adaptable to all  
Milling Machines.

More Powerful Drive.  
6 speeds, 350 to 3000.  
Heavier Spindle.  
S-K-F Precision Bearings.  
Full Swiveling Both Planes.

### NEW LOW PRICES

**SPEEDMILLER Jr.**  
for Overarms  
 $2\frac{1}{2}$ " to  $3\frac{1}{2}$ ".  
No. 7 B & S Spindle.  
Collet Capacity  $\frac{1}{2}$ ".

only \$195.

Parts and Collets for all HALCO Heads  
Quick Delivery—Order NOW!

**SPEEDMILLER Sr.**  
for Overarms  
 $3\frac{1}{4}$ " to 5".  
No. 3 Morse Spindle.  
Collet Capacity  $\frac{3}{4}$ ".

only \$295.

**Veet**

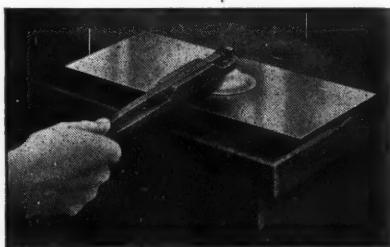
**Manufacturing Co.**

EAST DETROIT

MICHIGAN

cated trigger. The cup is held to the handle by a concealed soft brass bolt which is molded in the rubber, and can be quickly and easily replaced when necessary.

The Ipco Speed-Up Safety Vacuum

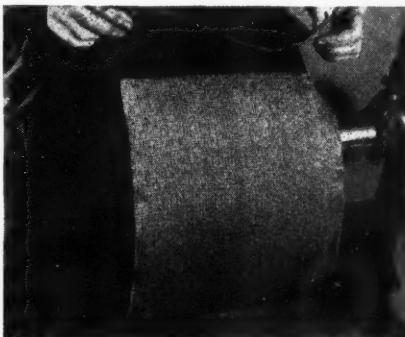


Ipco "Speed-Up" Safety Vacuum Lifter in Use

Lifter is 15 inches long overall and measures  $1\frac{1}{2}$  inches high at the cup end. The unit weighs  $4\frac{1}{2}$  ounces.

### Condensite Waterproof Pulley Lagging

An all-purpose waterproof pulley lagging which, it is claimed, can be quickly and easily applied without rivets, bolts, or heat and dries within 10 hours at room temperature is now being produced by the Condensite Engineering Corp., 2015



Condensite Waterproof Pulley Lagging

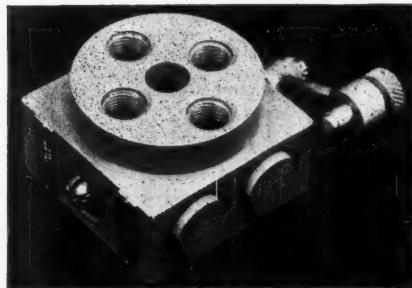
Chancellor St., Philadelphia 5, Pa. According to the manufacturer, the lagging adheres so firmly to all surfaces that a hammer and chisel are required to re-

move it. In addition, it is said to be weather and corrosion resistant and unaffected by sulphuric acid, oxidizing agents, soaps, alcohol, petroleum products, and so on. When dry, the material is claimed to be odorless, non-toxic, and non-inflammable.

Condensite Waterproof Pulley Lagging is designed to provide a frictional surface which is said to assure maximum transmission efficiency and belt life by eliminating belt slippage. It is equally suitable for crown, split, and flat pulleys utilizing leather, cord, wire-woven, or rubber belts. The lagging consists of a high quality mineral base fabric and waterproof compound and may be obtained in units comprising 70 x 40-inch treated fabric and sufficient compound for application, cut to size for any pulley by specifying diameter and face measurements, or in rolls of any width up to 42 inches.

### Electrol 4-Way Selector Valve

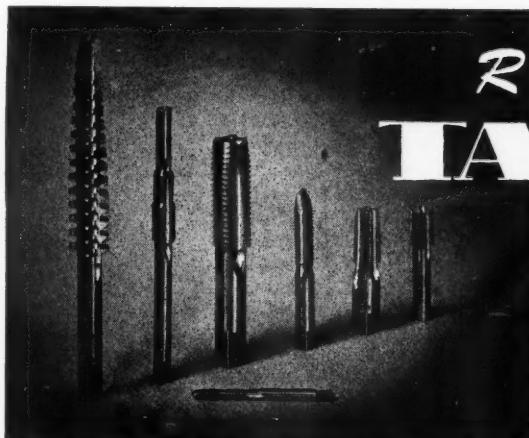
Electrol, Inc., Dept. MMS, Kingston, N. Y., has developed a 4-way selector valve which is said to provide a simple, convenient means for controlling flow to



Electrol 4-Way Selector Valve

the remote actuating cylinders of hydraulic systems.

Light, compact, and ruggedly constructed, the valve consists of an aluminum alloy body having four line connections, and includes a group of conventional spring-loaded balanced type poppet valves interconnected by ducts which direct the fluid to the desired channel. Actuated by cams, the valves are so arranged that rotation of the camshaft opens the proper combination of poppets to direct the fluid through the valve to



## R & N TAPS

Give long life, dependable service and are the favorite with hundreds of the largest and most exacting users.

Buy Reiff & Nestor Taps and get the benefit of wide experience, progressive engineering and precise workmanship.

Our stepped up production enables us to make prompt deliveries on both Standards and Specials.

Next time try R & N Taps.

**REIFF & NESTOR COMPANY**

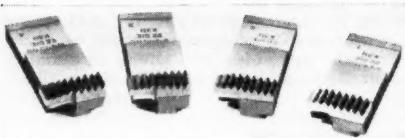
Manufacturers of TAPS AND REAMERS

LYKENS, PA.

the desired location. A position stop pin is said to prevent overrunning of the camshaft. Efficient ducting of the fluid and reduced pressure drop are claimed to be assured by coaxial assembly and adequate passage size.

### Jones & Lamson Carbide-Tipped Die Chasers

Carbide-tipped die chasers with ground thread forms for selected applications on turret lathes, automatics, and threading machines are now available from the Jones & Lamson Machine Co., Dept. 710



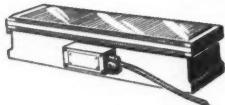
Jones & Lamson Carbide-Tipped Die Chasers

Springfield, Vt. In addition to increasing threading speeds, the long life of the chasers provides for unusual economy when they are suitably applied and correctly handled, the manufacturer states.

The chasers are claimed to be particularly effective in steel and still more efficient in hard rubber, fiber, and abrasive materials when used on machines with sufficient power, speed, and rigidity to handle carbide tooling effectively.



## CHUCKING with the SPEED of ELECTRICITY

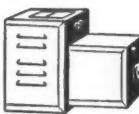


MAGNA-LOCK LAMINATED CHUCKS  
Two types, STANDARD and the ultra-powerful SUPREME — both with all steel laminated top plates—patented hermeti-coil waterproof construction. MAGNA-LOCK chucks give you 22% more working surface—uniform, pull-sizes from 4x6" to 30x96". And ask about special chucks, top plates, parallels and V-blocks.

Let Laminated MAGNETIC CHUCKS by Hanchett Set New Production Standards for You.

The Hanchett magnetic chucking method lifts the limit off production speeds for small parts finishing. Check your shop for machining operations where chucking and set-up time cuts into profits. Find out whether completely automatic "hands-off" production would boost your net. Then drop us a card. We'll help you apply Hanchett Magnetic Chucking to your grinding, milling, drilling, shaping operations....

Ask for Bulletin MM-108



NEUTROFIER  
For faster, more efficient magnetic chucking—this new combination Rectifier and Demagnetizer will help you lower production costs.



## Hanchett MAGNA-LOCK CORP.

Magnetic Chucks and Devices

BIG RAPIDS

MICHIGAN

### T.A.C. Open-End Ratchet Wrench

An open-end ratchet wrench for use on pipe, tube, conduit, cable, and rod fittings is now being marketed under the designation of T.A.C. by the C. J. Hendry Co., 27 Main St., San Francisco, Calif. The ratchet head is arranged to operate in a 7½-deg. arc or less, thus making the wrench ideal for use in restricted areas.

Originally designed for shipboard use, the T. A. C. Open-End Ratchet Wrench is claimed to possess time-saving qualities that make it applicable in the aircraft, automotive, railroad, petroleum, electrical,



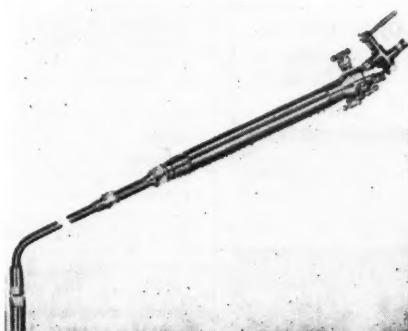
T.A.C. Open-End Ratchet Wrench

and other industries. T.A.C. ratchet heads, sockets, and accessories may be obtained separately or in sets in practically any desired sizes. An adapter available also makes it possible to use standard sockets with the T.A.C. ratchet head.

### Weldit Welding and Heating Torch

Utilizing two tanks of acetylene and one tank of oxygen, a three-hose welding and heating torch which is said to be of particular advantage in welding, heating, or brazing broken parts on heavy machinery, expanding tie rods, heavy press installations, bending large diameter pipes, and maintenance work is now being produced by Weldit, Inc., 990 Oakman Blvd., Detroit 6, Mich. An outstanding feature of the torch is the quick-acting oxygen cutoff which is designed

Weldit Welding and Heating Torch



## YOUR WORKMEN WILL LIKE THESE...



### READY-MADE AND FIRE RESISTANT WORK-BENCHES of STEEL



Fig. 732  
Pat'd. and Pats. Pending  
Drawer is extra.

Thousands upon thousands of "Hallowell" Benches are used in all types of shops throughout the country — because they offer the following advantages: standard heights, widths and lengths . . . several hundred interchangeable combinations . . . easily moved and re-arranged . . . can be joined end-to-end to form one continuous work-bench . . . bench tops are of Steel; Steel covered with "Tempered Preswood"; or smooth laminated wood.

**Write for the name and address  
of your nearest "Hallowell"  
Industrial Distributor, and for  
your copy of the "Hallowell"  
Catalog.**

OVER 45 YEARS IN BUSINESS

**STANDARD PRESSED STEEL CO.**

JENKINTOWN, PA., BOX 556

Chicago • Detroit • Indianapolis  
San Francisco • St. Louis

## Herman Granite Straightedge



### Herman Granite Straightedge

to instantly and automatically shut off the oxygen supply. The torch is also supplied with a two-valve control for using propane, natural, or manufactured gas and oxygen for heating purposes.

The Weldit Welding and Heating Torch includes a sturdy brass handle and Monel tip-tube. The torch is 51 inches long overall, weighs 6 lb. and 12 ounces.

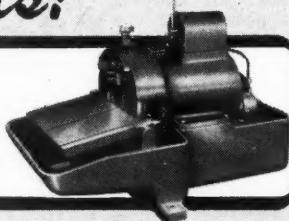
Designed to eliminate the necessity for continual rechecking, a straightedge made of granite is announced by The Herman Stone Co., 324 Harries Bldg., Dayton 2, Ohio. According to the manufacturer, the straightedge is made to an accuracy of 0.0001 inch every 3 feet and is approximately the same weight as the conventional cast iron straightedge.

The Herman Granite Straightedge is available in sizes up to 6 feet and is equipped with handles for easy use.

## THIS CARBIDE GRINDING TEAM *Cuts Costs!*

### WICKMAN-NEVEN BENCH GRINDER

—designed especially for grinding or lapping carbide. Has special reversible 1 HP motor, 12 gal./hr. coolant pump, easily adjustable table, swiveling wheel guard.



### STEEL-BONDED DIAMOND WHEELS

—practically indestructible with extra long life. Diamond particles stay in place until completely worn. Finish tools better for longer tool life.

### RESINOID-BONDED DIAMOND WHEELS

—for faster and freer carbide cutting and less frequent wheel dressing.

### STEEL-BONDED CHIP-BREAKER DIAMOND WHEELS

—with many times the service life of other chip-breaker diamond wheels. Reduce wheel and tool costs materially and speed grinding 3-4 times.

**GET THE FACTS**

Complete information on these  
Wickman products is yours for the  
asking. Write today.



15533  
WOODROW WILSON AVE.  
DETROIT 3, MICHIGAN



Aro Model 7072  
Balancer

clockwise with an adjustable open end wrench. Worn cables can be replaced by inserting a new cable through the bottom opening into the drum and rewinding.

The Aro Model 7072 Balancer is supplied complete with 6 feet of preformed wire cable, rubber bumper, and cable clamp for adjustments at any level.

necessity of twisting or turning the balancer.

Sturdy, light-weight construction of the unit is said to be achieved through the use of an all-steel stamped housing and drum. A high temper spring is claimed to ensure long life and trouble-free service. The balancer can be easily adjusted to lower tension by simply moving the spring trigger located on the shaft. To increase tension, the shaft is wound

## Extension Parallels for Moore Jig Borers and Grinders

Extension parallels for use with Moore jig borers and jig grinders to increase effective table size have been announced by the Moore Special Tool Co., Inc., 730 Union Ave., Bridgeport 7, Conn. Furnished in sets of four, they are said to accommodate work almost twice table size with no loss in accuracy of table settings, thus considerably widening the range of application of the jig borers and grinders, which utilize precision lead screws to locate holes by the coordinate method.

With the extension parallels, the Moore jig grinder and Models 1 and 2 jig borers are said to easily handle work 5 inches larger than table size in both directions or work 10 inches larger in only one direction. The table size of the Model 1 jig borer and of the jig grinder is 10 x 16 inches; the table size of the Model 2 jig borer is 10 x 19 inches. When the extension parallels are applied, the capacity of the 10-inch rotary table for circular parts used with all three machine tools can likewise be effectively increased to accommodate rings more than 20 inches in diameter.

The extension parallels are designed to afford ample drill clearance and are pro-

## ACCURATE WITHIN .0005"

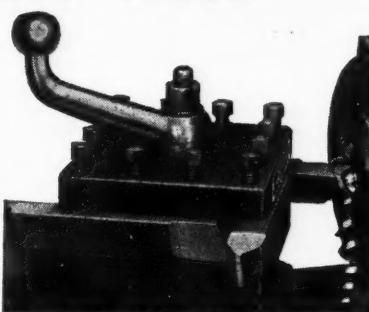
# Enco

### LATHE TURRETS

Enco Lathe Turrets re-index to the same position within five ten thousandths. Piece after piece can be machined with complete confidence in production precision.

There are no pins or bushings in Enco Toolpost Turrets to wear "egg shaped" or out of alignment. This ability to "come back" accurately makes Enco users come back for more turrets.

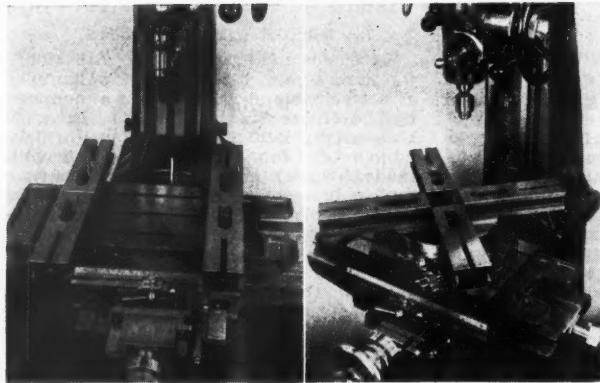
Also Mfrs. of Enco Hexturret Bed Turret for 9" to 16" Lathes.



- 12 POSITION INDEXING
- 3 WORKING POSITIONS FOR EACH TOOL
- HARDENED STEEL CONSTRUCTION
- MOUNTS RIGIDLY IN COMPOUND T-SLOT
- KEEPS SETTING ACCURATELY
- INDEXING IS SELF-CONTAINED. ELIMINATES ALL CHIP INTERFERENCE

**ENCO MANUFACTURING COMPANY**

Dept. 1108 — 4522-24 W. Fullerton Ave., Chicago 39, Illinois



(Left) Extension Parallels Bolted to Table of Moore Jig Borer to Accommodate Die More Than Twice Table Size. (Right) Extension Parallels Used With 10-Inch Rotary Table to Accommodate Rings over 20 Inches in Diameter

vided with T-slots for clamping dies in place. The parallels are made of close-grained Meehanite and are each 2 inches thick x 3 inches wide x 10 inches long.

### 3P Head Type Punch

A head type punch made from select tool steel which is precision machined, heat treated, ground and Brinell tested is now

four series, is furnished in a minimum length of  $1\frac{1}{4}$  inches, thus providing for an unusually wide range of application. Any point size between listed sizes can be readily furnished on special order.

A round type retainer for the 3P Head Type Punch is optional in two sizes and is furnished in a high tensile steel, which is machinable. The retainer allows for a light press fit on the punch body so that the punch is held firmly, with de-

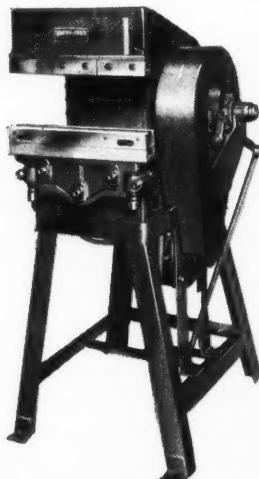
**WHITNEY-JENSEN PRODUCTS**  
38 YEARS EXPERIENCE

### No. 247 -- 18" Power Press Brake

Capacity— $4\frac{1}{2}$  Tons. Speed—47 RPM.

Working Length—18". Stroke—1".

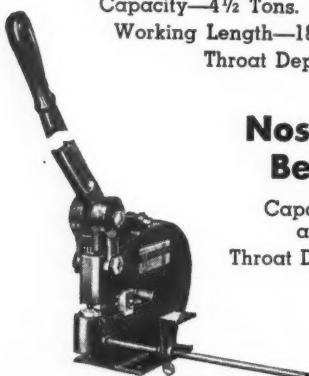
Throat Depth— $6\frac{1}{4}$ ".



### Nos. 16 and 17 Bench Punch

Capacity— $\frac{3}{8}$ " thru  $\frac{1}{4}$ " and  $\frac{1}{4}$ " thru  $\frac{1}{4}$ ".

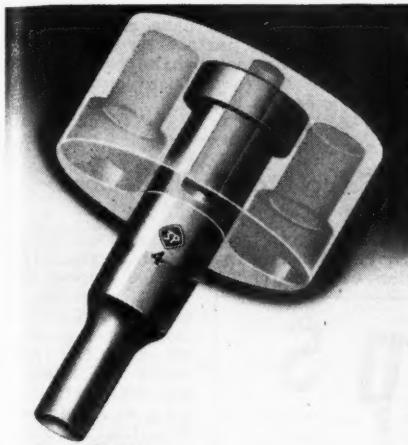
Throat Depths— $3\frac{1}{2}$ " and  $6\frac{1}{2}$ ".



**WHITNEY METAL TOOL COMPANY**

110 FORBES ST.

ROCKFORD, ILL.



3P Head Type Punch

structive shattering action reduced to a minimum, thereby providing for long die and punch life, it is claimed.

---

### Starrett Vest Pocket Dial Indicator Gage

Described as being no larger than a thin pocket watch, the Starrett Vest Pocket Dial Indicator Gage illustrated herewith, product of The L. S. Starrett Co., Athol, Mass., is designed to provide a handy means for measuring and comparing thicknesses of sheet metal, wire,

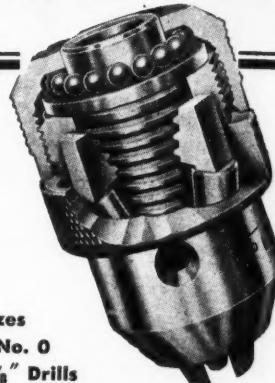
Starrett Vest Pocket Dial Indicator Gage



## SPEED-UP DRILLING WITH

**Ettco**

### KEYLESS DRILL CHUCKS



5 Sizes

For No. 0  
to  $\frac{5}{8}$ " Drills

Drill changes are lightning quick and require little effort with Ettco Keyless Drill Chucks. There are other savings, too — Ettco Chucks have an automatic tightening action which assures a firm and rigid grip of the drill at all times, prevents damaged shanks, and eliminates time spent in retightening. These time and strength-saving features make Ettco Drill Chucks ideal for shops that want top drilling output at lowest cost.

### WRITE FOR BULLETIN NO. 6

It gives details of these high-quality precision made chucks. Free copies on request.

## ETTCO TOOL CO.

598 Johnson Ave.

Boston, Massachusetts

Detroit, Michigan

• Brooklyn 6, N. Y.

• Portland, Connecticut

• Chicago, Illinois

plastics, paper, leather, rubber, and so on. The gage is said to be especially useful to inspectors, salesmen, purchasing agents, and stock clerks making a variety of quick measurements.

Constructed to fit into the curve of the thumb and index finger, the gage includes a large easy-reading dial graduated to read in thousandths of an inch. A small "tell tale" hand records revolutions of the larger hand up to the maximum range of  $\frac{1}{8}$  inch. The spindle is raised by sliding a serrated plate at the top edge of the gage.

The Starrett Vest Pocket Dial Indi-

cator Gage is precision made with a die cast, chrome plated case and stainless steel component parts. The dial crystal is said to be non-breakable. Decimal equivalents of fractions are provided on the back of the gage.

### Sample-Marshall Diamond-Bonded Tools

A line of diamond-bonded tools utilizing the African diamond in a concentration of approximately 1,400 coarse dia-

mond particles to every square inch is now being offered under the trade name of Sample-Marshall by the Triangle Equipment Co., Inc., 45 River Rd., Nutley, N. J. The line comprises files for use on ceramics, tungsten, molybdenum, glass, and so on; mounted tools for use on hardened metals and in the light finishing of soft metals, as well as routine operations on cemented carbides, quartz, glass, and ceramics; and wheels for surface grinding at speeds from 4,500 to 6,000 surface feet per minute, shaping and sharpening cemented carbide tools, shaping glass, quartz, and ceramics. Special drills, counterbores, and reamers for ceramics, glass, and quartz can also be obtained.

According to the manufacturer, the method of binding the diamond grits to each tool is such that each diamond particle is set individually on the working surface and embedded in such a manner



## steps to HIGHER PRODUCTION and LOWER COSTS

### 1. Consult

the Milford free engineering service



### 2. Choose

one of 15 basic Milford rivet setting machines — offering unlimited versatility.



### 3. Select

exactly the right semi-tubular or split rivet or cold-headed fastener from Milford's complete line.

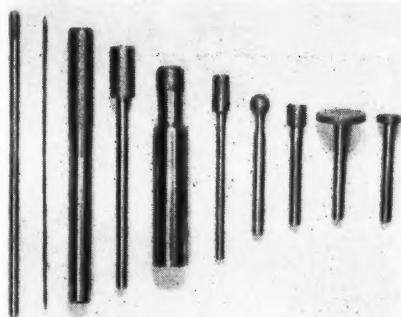


# MILFORD

1000 MERWIN ROAD  
MILFORD, CONN.

RIVET &  
MACHINE CO.

1000 WEST RIVER ST.  
ELYRIA, OHIO



Sample-Marshall Diamond-Bonded Tools

as to support the adjoining particles. The diamond-support-diamond setting is said to produce a rim that reduces wear and diamond change to a minimum. The close relationship of diamond to diamond also provides for a high percentage of particles on the working surface and is claimed to afford maximum cutting speed and a uniformly smooth action, as well as effect fullest possible economy.

### Wilbur & Williams Silicated Traffic Marking Paint

Designed for the marking of industrial safety, storage, and traffic areas, a silicated traffic marking paint which is claimed to be unusually durable and resistant to continual cleaning and to provide the additional safety feature of preventing slipping hazards is now being manufactured by The Wilbur & Williams Co., Greenleaf and Leon Sts., Boston 15, Massachusetts.

According to the manufacturer, the paint can be applied equally well with a brush or line marker and is available in white and yellow in 1 and 5-gallon containers.

### Zagar Model "B" Collet Speed Chuck

Designed to rotate on its own ball bearings, thereby providing for maximum holding capacity, the maintenance of accuracy, and the elimination of overhang and chatter, it is claimed, a collet speed chuck designated as the Model "B" is now being marketed by Zagar Tool, Inc., 23880 Lakeland Blvd., Cleveland 17, Ohio.

**441 STANDARD SIZES**  
**WORLD'S LARGEST RANGE OF SIZES**  
**KINDS**  
**WATER-DIE**  
**OIL-DIE**  
**AIR-DIE**

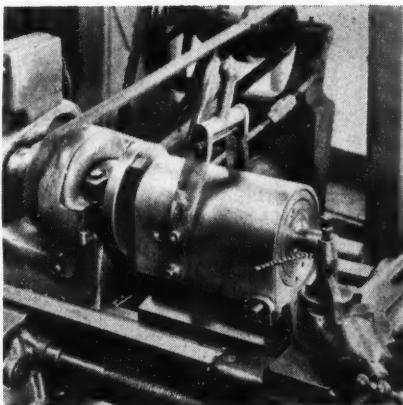
*Write for  
FREE CATALOG*

**MARSHALL STEEL CO.  
LISLE, ILLINOIS**

**WRITE BOX 58-C**

The chuck derives its turning power from the spindle of the machine to which it is attached. The collet is arranged to remain stationary while opening and closing, thus making it possible to maintain accurate length dimensions on parts being machined. The working mechanism of the collet closing device is located between two precision ball bearings, the long support between bearings providing for maximum accuracy of the chuck.

The Zagar Model B Collet Speed Chuck is designed in 1 and 2-inch through capacities and is made to order to suit any type of lathe, grinding machine, or other



### NEEDLE ROLLERS

Manufactured by men experienced in the needle roller field—your assurance of:

**Quality! Fast Delivery!**  
**Price!**  
**Any size! Any quantity!**

Send specifications for quotation.



**BREMEN BEARINGS, INC.**

PHONE 325 • BREMEN, INDIANA

### PROMPT DELIVERY On STEEL SHELVING



Open Type  
(Closed type  
also available)

#### Standard Sizes

#### Special Units Made to Your Specifications

Economical, all purpose, adjustable shelving units for loads from 100 to 150 lbs. per shelf. Dividers available to convert shelving into stock bins, etc.

Write for details  
and prices

**HILCO MANUFACTURING CO.**  
1721 Elston Ave.  
Chicago 22, Ill.

Zagar Model "B" Collet Speed Chuck  
Installed on a Lathe

rotating spindle equipment. The 1-inch size utilizes a standard 5C collet and the 2-inch size, a Zagar No. 310 draw type master collet with No. 6 W&S collet pads.

### 4-in-1 "All White" Skin Cleanser

The manufacturer of an industrial hand soap to be known as 4-in-1 "All-White" Skin Cleanser is announced by the Kent Chemical Co., 1600 Linden Ave., Grand Rapids, Mich. Said to completely dissolve, leaving no messy wash basins, clogged drains, or residue on the user's hands, the soap, it is claimed, is extremely bulky and contains no harsh scrubbers or abrasives. Entirely free of corn meal, it is said to be equally suited for use by both men and women due to its gentle action.



### GRAY TURRET HEAD METAL CUTTER OR NIBBLER

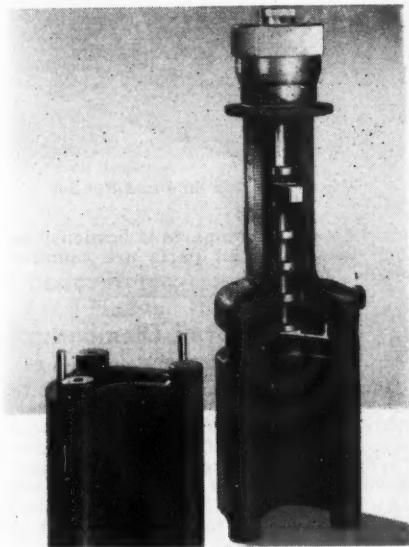
**N.A.M.** Pioneer Award  
Pioneer Award  
GIVEN TO GRAY

Most modern Nibbler for  
Template Cutting, Tool  
Rooms, Shipbuilding, Air-  
craft Parts, Aircraft Tub-  
ing, Sheet & Plate Shops.

**GRAY MACHINE CO.**  
Box 596, Philadelphia, Pa.

## Cadillac "Pla-Chek" Portable 6-Inch Gage

Known as the "Pla-Chek," a portable 6-inch gage designed primarily for the checking of small products is announced by the Cadillac Gage Co., 20315 Hoover Rd., Detroit 5, Mich. Said to be ideal for the checking of gages, tools, and dies either on a surface plate or at a machine, the gage is completely self-contained and extremely simple in operation, it is claimed. Light and easy to carry, the gage can



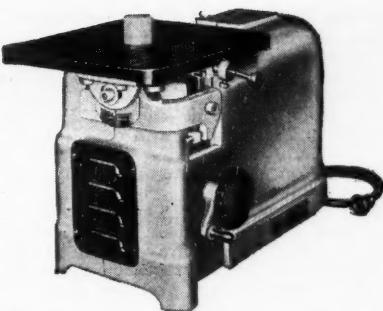
Cadillac "Pla-Chek" Portable 6-Inch Gage  
with 6-Inch Risers

be readily checked in and out of the tool crib.

An advantage of the Pla-Chek is the fact that it also can be used on larger jobs without the sacrifice of portability. Its capacity can be increased by the addition of 6-inch risers which do not change the overall accuracy of the gage. The Pla-Chek is claimed to be accurate to 0.00005 inch.

## Wespo Improved Stud and Nut Set

A conveniently arranged stud and nut set of improved design is now being introduced under the trade name of Wespo



## MILWAUKEE PROFILE GRINDER Precision Built for Precision Work

Especially built for precision grinding of die clearances; sharpening of cutter dies, contour grinding, production grinding, finish grinding of hardened steel parts. These features tell you why:

- **1/2 H.P. Ball Bearing Motor** — Plenty of power maintains high spindle speeds and full capacity. No stalling!
- **Collet Chuck** — for fast, easy mounting or removal of wheels; assures absolute true running of carbide or diamond wheels.
- **Compound Tilting Table** — permits full range grinding of compound angles, curves and contours.
- **Built-in Diamond Dresser** — always ready for action; no loose parts to assemble; keeps wheels trued-up at all times.
- **Your choice of either 20,000 or 30,000 R.P.M. Spindle Speed.**

## Here's Model F5 MILWAUKEE DIE FILER with the New All-Purpose Deep-Throated Overarm



Performs all three die-making operations . . . filing, sawing lapping . . . cuts cost 40% to 60%.

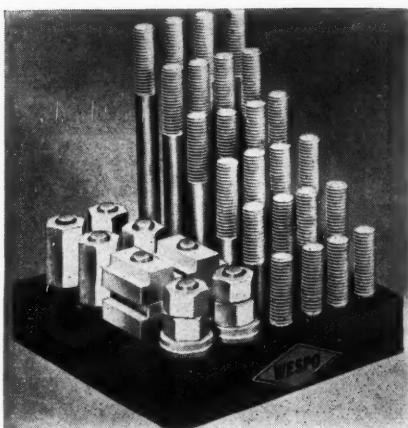
Write for Literature on Both Machines and name of nearest dealer.

**RICE PUMP & MACHINE CO.**  
Division of Milwaukee Chaplet & Mfg. Co.  
103 S. 40th STREET MILWAUKEE 4, WIS.

**MILWAUKEE**  
**DIE FILERS • PROFILE GRINDERS**

by the West Point Manufacturing Co., 19635 Merriman Ct., Farmington, Mich. The set is available in  $\frac{1}{4}$ ,  $\frac{5}{8}$ , and  $\frac{1}{2}$ -inch standard thread sizes (Class 3 fit) and includes four each of 3, 4, 5, 6, 7, and 8-inch studs and four each of the nuts, washers, T-slot nuts, and coupling nuts.

The coupling nuts are designed to enable the operator to obtain stud lengths from 3 to 16 inches. The specially designed and machined T-slot nuts permit the use of studs to the full capacity of the T-slot. The studs are made of heat-treated alloy steel with threads cut after heat treatment to prevent distortion.



Wespo Improved Stud and Nut Set



**WADE ENVELOPES**

protect  
Shop Orders, Drawings,  
Blueprints, Etc.

Made in three styles, transparent, fibre, and metal backs. Non-inflammable acetate windows. Special style or size to order. Write for details.

**WADE INSTRUMENT COMPANY**  
Phone CEDAR 4728  
1422 E. 109th St., Dept. M., Cleveland, Ohio

The balance of the parts is hardened for long wear, and all parts are cadmium plated.

### Clark Improved Diamond Penetrators

Two improved diamond penetrators for Rockwell testing are announced by Clark Instrument, Inc., 10200 Ford Rd., Dearborn, Mich. The Clark "C" Diamond Penetrator is designed to fit all makes of hardness testers for standard Rockwell testing, and the Clark "S" Diamond Penetrator is said to fit all machines for superficial Rockwell testing.

According to the manufacturer, both penetrators are carefully designed to provide accurate results. The diamond points are specially selected for proper stratification and freedom from internal stress-

**NEED HELP  
RIGHT NOW  
ON GEARS?**



**Abart**

Phone,  
wire  
or write

GEAR & MACHINE CO., gear specialists

For immediate attention. Any quantity, large or small. Send B/P or samples, for prompt quotation. Cut only to specifications. No stocks.

**Spur**—96 D.P. to 5/7 D.P.  $\frac{1}{4}$ " P.D. to 18" P.D.

**Bevel**—48 D.P. to 5/7 D.P. Max. P.D. 20" —Max. ration 4:1.

**Worms**—32 D.P. to 5/7 D.P.  $\frac{1}{2}$ " P.D. to 5" P.D.

**Worm Wheels**—32 D.P. to 5/7 D.P. 1" P.D. to 14" P.D.

**Helical & Spiral**—96 D.P. to 6 D.P. up to 14" P.D.

**Sprockets**— $1\frac{1}{4}$ " dia. to 14" dia.

**Abart GEAR & MACHINE CO.**

4819 W. 16th St. • Chicago 50, Ill.  
Phone: ROckwell 2-2827

### Adjustable Collet Bushing Chuck-

provides an accurate method for mounting centerless armature shafts and similar parts in a lathe. Use in either head or tail spindle. The brass collets are adjustable for running or driving fits. Chucks supplied with 3 collets; 9/16", 5/8", and .637" capacity. Extra round collets, 1/4" to 1" by 16ths, \$1.10 each.



Chuck with No. 2 shank . . . \$9.45  
Chuck with No. 3 shank . . . \$9.95  
F.O.B. factory

**SOUTH BEND LATHE WORKS**  
427A E. Madison St.  
South Bend 22, Indiana



Clark Improved Diamond Penetrator

as. The holders are designed and finished to precisely correct angles and radii.

Accurately made to proper size and

shape, the Clark Diamond Penetrator is furnished as a standard accessory on all Clark hardness testers, both for standard and for superficial Rockwell testing.

### Condor Homo-Flex Heavy Duty Air Hose

The development of Condor Homo-Flex Heavy Duty Air Hose for rugged service has been announced by the Manhattan Rubber Division, Raybestos-Manhattan, Inc., Passaic, N. J. According to the manufacturer the hose has an extra strong tube compounded of Manhattan oil-proof Flexelastics, two braids of heavy strength member, and a thick abrasive resistant oilproof Flexelastics cover, yet retains a high degree of flexibility.

The hose is available in two sizes with  $\frac{3}{4}$  and 1-inch inside diameters and working pressures of 350 and 300 pounds.

### "Kop-R-Tube" Insert Roll Die

An insert roll die for marking copper or brass pipe and tubing is now being manufactured by the M. E. Cunningham Co., 158 E. Carson St., Pittsburgh, Pa. Identified as the "Kop-R-Tube," the die can be furnished for use in marking machines or in standard coiling machines used for coiling copper tubing. It is grooved to suit the size of tubing to be marked and is provided with a recess slot for changeable marking die inserts which can be easily and quickly changed as they become worn.



Exclusive  
"Tru-Grip"  
Tap Holder  
is lighter,  
smaller  
in diameter.

### This Tapping Head

# CUTS PRODUCTION COSTS!

Reduce labor costs and cut down tap breakage with Procu-nier High Speed Tapping Equipment. Check these unusual advantages:

Accurate, high speed tapping. Procu-nier tap heads will give you cleaner, sharper threads . . . in less time, with less spoilage.

Fewer broken taps. Friction clutch regulates tap driving pressures, operators quickly detect dull or "loaded" taps . . . avoiding costly tap breakage.

These and many other proven exclusive features assure you of fast, accurate tapping . . . reduced production costs.

Cross section of tap holder (at left) shows how tap is held by the round, driven by the square . . . tap shanks are never "chewed up."

WRITE  
FOR FREE  
CIRCULAR

**Procunier**  
*Safety Chuck Company*

12 S. Clinton St.,  
Chicago 6, Ill.

**Procunier Safety Chuck Co.,**  
12 S. Clinton St., Chicago 6, Ill.

Gentlemen: Please send me your illustrated brochures which give complete prices and specifications on Procunier High Speed Tapping Heads & Machines.

Name .....

Address .....

City..... Zone..... State.....

# USE ECONOMY

Headless  
Set  
Screws

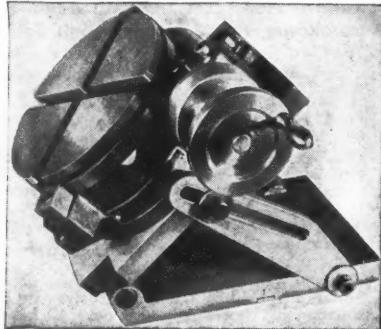
Socket  
Set Screws



*Try Them On Your Next Job!*

**ECONOMY  
MACHINE PRODUCTS  
COMPANY**

5212 Lawrence Ave., Chicago 30, Ill.



## 5 IN. ROTARY TABLE ON ADJUSTABLE ANGLE PLATE

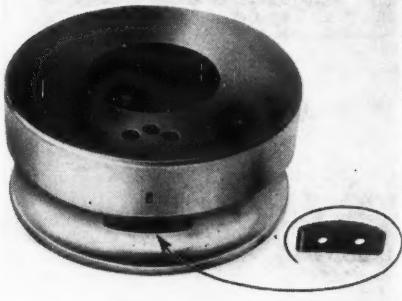
for

SMALL and FINE CIRCULAR MACHINING  
CAN BE PURCHASED SEPARATELY

Accurate — Dependable

Write for Bulletin  
We Also Make Four Larger Sizes.

**JOHN B. STEVENS INC.**  
482 Canal Street      New York 13, N. Y.



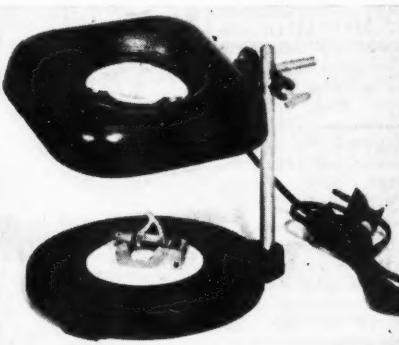
"Kop-R-Tube" Insert Roll Die

Machined to precision specifications, the Kop-R-Tube Insert Roll Die is made to suit machines now in use and includes a ball bearing to provide for maximum efficiency. The die can be designed for any special machine and is available for tubing  $\frac{1}{4}$  inch in size and larger.

## Montgomery Bench Type Magnifier

A bench type magnifier featuring a screw device which permits the magnifier to be attached with an ordinary thumbscrew movement to any shaft or rod up to  $\frac{1}{2}$  inch in diameter is now being marketed by Montgomery & Co., Inc., 53 Park Pl., New York 7, N. Y. Designed to reduce eyestrain to a minimum, the magnifier is claimed to be particularly useful for such work as reading machine

Montgomery Bench Type Magnifier



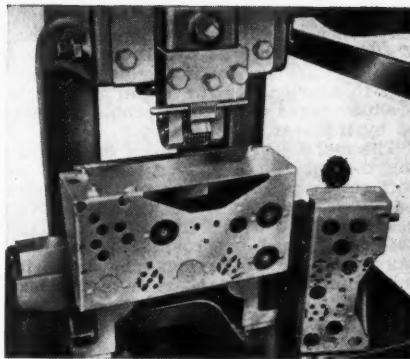
tool dials or rigging on special fixtures, as well as various other applications.

Specifications of the Montgomery Bench Type Magnifier are as follows: glass diameter, 3 inches; glass power, 3.25; illumination, 4-bulb; and current, alternating or direct.

### Acromark Adjustable Stamping Fixture

An adjustable stamping fixture adaptable for use in any standard press is announced by The Acromark Co., 9 Morrell St., Elizabeth 4, N. J. The fixture consists of a casting on which is mounted adjustable steel slide blocks that permit the stamped part to be numbered on the end and again on the side in two successive press strokes. To accomplish duplicate numbering, a duplicating fixture for operating the actuating arm of the numbering head is added.

Adjustment of the Acromark Stamping Fixture can be readily made by the loosening of screws. Particularly adaptable to use in the numbering of instrument and radio chassis, the fixture, as illustrated, is designed to hold stamped



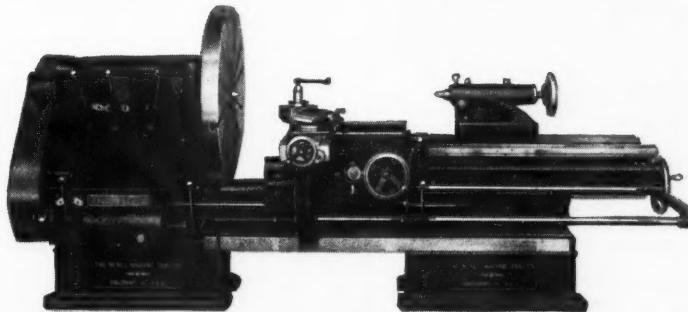
Acromark Adjustable Stamping Fixture in Use

parts having one or more flat surfaces ranging in size from 1 x 2 to 4 x 10 inches.

### Elgin "Tipt-Type" Sapphire Gage

Known as the "Tipt-Type," a gage with approximately  $\frac{1}{4}$ -inch sapphire tip metallically bonded to the leading end of the

## Extension Bed Gap Lathes



The Extension Bed Gap Lathe is designed to be used either as a gap lathe or an engine lathe. We also manufacture a line of regular geared head engine lathes. Write for circulars.

Illustrated is the Series  
"AG" 20/40" Extension  
Bed Gap Lathe. Also made  
in 28/50" Heavy Duty.

*The Nebel Machine Tool Co.*

steel member is announced by the Sapphire Products Division, Elgin National Watch Co., Aurora, Ill. This construction is said to provide for maximum economy and to also enable the manufacturer to produce gages of extra length as requested by the user.

The metal leader is bonded to the gaging member by a conventional hard or soft soldering method after the sapphire has been metallized by an exclusive process. Combined with a flexible handle, the tool is claimed to provide for a maximum number of gagings per day with minimum operator fatigue and to necessi-



Elgin "Tip-Tite" Sapphire Gage

### SAVE FLOOR SPACE LIFTING

Yohe racks save floor space, hold more stock, require less lifting. Capable of holding 10,000 and 12,000 pounds for bars 10 to 20 feet long.

Write for details.



WM. S. YOHE SUPPLY CO.  
305 GIBBS AVE., N. E. CANTON, O.

tate no wear tolerance, thus opening manufacturing tolerances. The gage is available in sizes ranging from 0.020 to 1.000 inch.

### Waldes "Truarc" Bowed "E" Retaining Ring

To assure the accurate positioning of a series of gears and spacers used in counter gear assemblies of business machines, Waldes Kohinoor, Inc., 47-10 Austin Pl., Long Island City 1, N. Y., has developed the Waldes "Truarc" Bowed "E" Retaining Ring. The unit is a three-prong ring bent like a bow out of its plane at about its horizontal center line to a degree corresponding to the maximum end play as conditioned by existing tolerances.

As shown in the accompanying illustration, the gears and spacers are assembled between a "flat" Truarc Standard "E" Ring and a Bowed "E" Ring. The latter takes up end play while having sufficient resiliency to permit the gears to turn freely. Constant alignment of parts and

QUICK DELIVERY  
Write for Specification  
Sheets and Prices . . .  
COLONIAL BUSHINGS, Inc.  
P.O. Box 37, Harper Station, Detroit 13

COLONIAL  
DRILL JIG BUSHINGS

### Ball Bearing Live Center

Designed for maximum strength and rigidity, the Ball Bearing Live Center is recommended for high speeds, heavy roughing cuts, etc. 60 degree point runs in substantial precision ball bearing which is easily replaceable.



Center with No.  
2 taper shank \$13.75  
With No. 3 shank \$16.25  
f.o.b. factory

**SOUTH BEND** LATHE WORKS  
427A E. Madison St.  
South Bend 22, Indiana

BOWED "E" RING

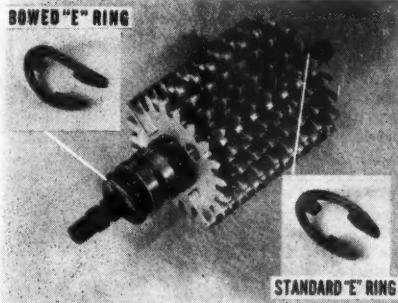


Illustration Showing Manner in which Wadles "Truarc" Bowed and Standard "E" Rings are Used to Assure Accurate Positioning of Multiple Gears on Grooved Shaft

accurate meshing of gears under proper tension are thereby said to be assured.

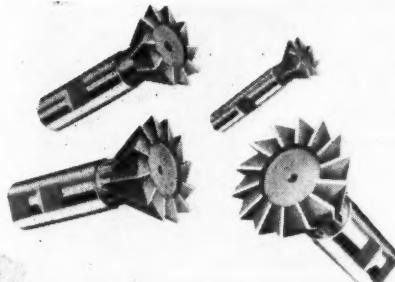
Truarc Standard and Bowed "E" Rings are manufactured in a wide range of sizes and are designed for quick and easy installation on grooved shafts in a radial direction. No special tools are required for assembly or disassembly.

### Weldon Angular Cutter

For cutting dovetails and similar work, The Weldon Tool Co., 3000 Woodhill Rd., Cleveland 4, Ohio, is offering a shank type angular cutter which is said to be particularly useful in the toolroom and other milling departments. Designed to reduce set-up time to a minimum, the cutter is recommended for use in Weldon end mill holders but may also be readily used in collets.

Furnished in a 60-degree angle and

### Weldon Angular Cutters



# It's NEW!



It's a  
"Knock-Out"

8 MODELS from  $\frac{1}{4}$ " to  $\frac{7}{8}$ " Complete  
with the POPULAR  
"Knock-Out" KEYLESS CHUCK

From the lightweight, streamlined  $\frac{1}{4}$ " model (illustrated) to the  $\frac{7}{8}$ " brute these 8 new drills are designed and engineered for speed and power. Ball bearing mounted motors; heat treated, alloy steel gears; balanced for easy operation; equipped with "K-O" Keyless Drill Chucks. These are some of the outstanding features of the NEW "KNOCK-OUT" PORTABLE ELECTRIC DRILLS.

Choose the one that fits your needs. Mail the coupon TODAY for complete details of the NEW "K-O" Portable Drills PLUS two new "K-O" 7" Sanders and Grinders.

and a NEW "K-O"  
BENCH GRINDER . . .



This Six Inch Utility Bench Grinder is precision built with a powerful motor fully enclosed, dynamically balanced, equipped with oversize ball bearings. Complete with 2 grinding wheels, "K-O" Abrasive Wheel Dresser and adjustable tool rests. Mail the coupon TODAY for complete details.

K. O. LEE CO., 1114 First Ave. S. E.  
Aberdeen, South Dakota

Gentlemen:

Please send your illustrated catalogue showing all the NEW "K-O" Portable Drills, 7" Sander and 6" Bench Grinder.

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_

right-hand cut, the Weldon Angular Cutter is offered in four cutter diameters of  $\frac{3}{8}$ ,  $1\frac{1}{8}$ ,  $1\frac{1}{4}$ , and  $2\frac{1}{4}$  inches with cutter widths of  $\frac{1}{8}$ ,  $\frac{1}{4}$ , and  $1\frac{1}{8}$  inches respectively, shank diameters of  $\frac{3}{8}$ ,  $\frac{5}{8}$ ,  $\frac{7}{8}$ , and 1 inch respectively, and overall lengths 1 inch respectively, and lengths of  $2\frac{1}{8}$ ,  $2\frac{1}{2}$ ,  $3\frac{1}{4}$ , and  $3\frac{3}{4}$  inches respectively.

### Ridermikrokator

Product of The Swedish Gage Company of America, 8900 Alpine Ave., Detroit 4, Mich., the Ridermikrokator illustrated herewith is intended for checking out-of-



**STANDARDIZE ON  
ACE DRILL JIG  
BUSHINGS**

Be Specific . . .  
Specify ACE

When you order drill  
jig bushings, there's no  
doubt about what you  
want. Assured precision,  
a source that offers you  
immediate delivery on  
a full range of standard  
sizes and prompt service  
on specials — ACE  
Gives You All This.

REMEMBER—LARGEST STOCK IN THE WEST—IMMEDIATE DELIVERY ON STANDARD SIZES — FASTEST SERVICE ON SPECIALS.

ACE drill jig bushings are now available through distributors from coast to coast. If none is now serving your territory, write, wire or phone your order today.

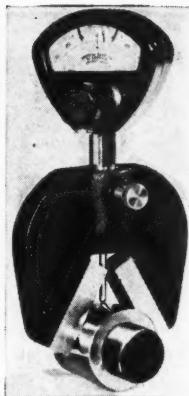
Ask for catalog containing the  
exclusive "TIME SAVER TABLE."

**WEST COAST AERO TOOL CO.**  
5403 Fountain Avenue, Los Angeles 14, Calif.

roundness and diameters of cylindrical parts. Since the measurements are made according to the three-point principle, the instrument can be used to good advantage for checking centerless-ground pieces.

The Ridermikrokator utilizes frames which are made of malleable cast iron and provided with hardened, ground, and lapped anvils and insulating grips. The measuring surfaces of the anvils can be tipped with cemented carbide. Since the angle between the anvils is 60 degrees, the difference in radius between the setting gage and the work is measured, and the tolerance pointers of the Mikrokator should, therefore, be used only to half the limits required.

The measuring instrument is a standard Mikrokator No. 200 which is locked in the frames by a screw. The instrument is supplied complete with a removable measuring point No. 524, sizes 1 and 2.



Ridermikrokator

### Kester "Resin-Five" Core Solder

The Kester Solder Co., 4201 Wrightwood Ave., Chicago 39, Ill., announces the development of Kester "Resin-Five" Core Solder for all types of electrical and electronic soldering operations. According to the manufacturer, the solder is non-corrosive, non-conductive, and virtually odorless, and can be easily used to solder zinc, brass, nickel silver, nickel

**VIKING**

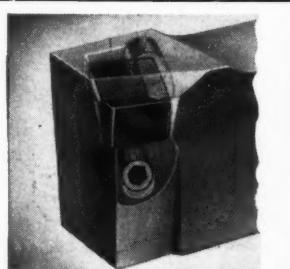
**INSERTED SOLID CARBIDE TOOLS  
WITH MECHANICAL LOCK**

A modern tool holder designed especially for efficient, economical use of solid carbide inserted tool bits. Eliminates ground in chipbreakers and brazing strains. Provides quick change tool bits and low reconditioning costs.

Shank dimensions from  $\frac{3}{4}'' \times \frac{3}{4}'' \times 4\frac{1}{2}''$  to  $1\frac{1}{2}'' \times 2'' \times 7''$ .

Write for folder.

**VIKING TOOL CO., SHELTON, CONN.**



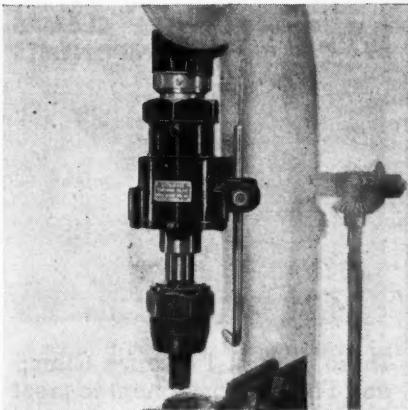
plate, copper, and ferrous alloys.

Kester Resin-Five Core Solder, it is claimed, is not a mixture of rosin with another flux but a resin involving chemical interaction at the anhydride structure of the rosin itself, converting it from a naturally inactive state to an active state and yet preserving its original non-corrosive and electrically non-conductive physical character.

### Dorman Heavy Duty Automatic Reverse Tapping Attachment

The Dorman Machine Tool Works, 36 S. Mac Questen Pkwy., Mount Vernon, N. Y., is now introducing a heavy duty, positive gear drive, automatic reverse tapping attachment for use in back geared drill presses. The attachment is designed to drive and automatically reverse  $\frac{1}{4}$  to 2-inch pipe taps and the same capacity standard hand or machine screw taps.

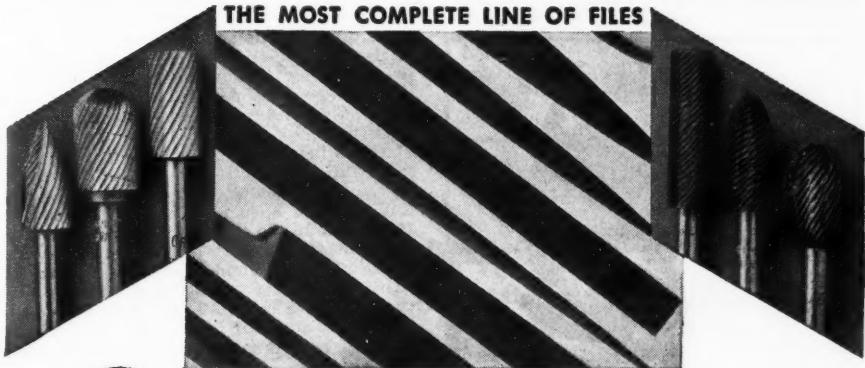
The tap holder is of the collet type, with the tap held by its round shank and driven by its square end. The at-



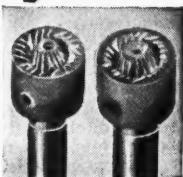
Dorman Heavy Duty Automatic Reverse  
Tapping Attachment

tachment is claimed to be particularly suitable for long run production tapping operations using large type taps.

### THE MOST COMPLETE LINE OF FILES

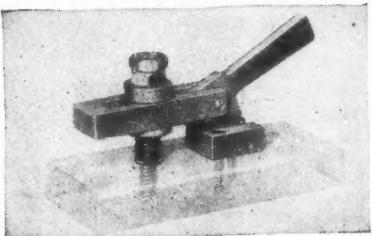


## Grobet - THE OLDEST NAME IN FILES



When precision and accuracy are required, GROBET, only, assures the finest workmanship, performance and durability BACKED BY OVER 136 YEARS OF LEADERSHIP IN THE INDUSTRY. Ask for GROBET by name at your nearest supply house—the most complete line of Swiss Precision Files, Riffliers, Rotary Files, Burs, American Pattern Files, etc., etc.

**GROBET FILE CO. of AMERICA, Inc.**  
421 Canal Street, New York 13, N. Y.

**M-T****Fixture Clamps  
and Components**

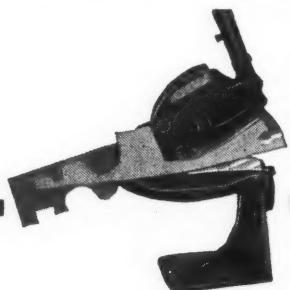
There is a M-T Fixture Clamp and Fixture Component to meet your most exacting requirements. Immediate delivery.

Write for catalog and price list.

**MORTON MACHINE WORKS**

2424 Wolcott

Detroit 20, Mich.

**CUT ANY SHAPE, CLEVERLY**

with a

**BEVERLY Throatless SHEAR**

Cuts straight and irregular shapes faster—better! Order No. 1 for 14 ga. (with High Carbon, High Chrome Blades for 18 ga.); No. 2 for 10 ga. (with H.C.H.C. blades for 14 ga.); and No. 3 for  $\frac{1}{8}$ " mild steel or 10 ga. stainless. Write for catalog!

**THE BEVERLY SHEAR MFG. CO.  
3000 W. 111th St., Dept. 3, Chicago 43, Ill.****Cogmatic Flame Machining Process**

Fast replacement of worn cast iron or cast steel sprockets and gears is now possible through an economical method of flame machining announced by the Cogmatic Co., 757 N. Water St., Milwaukee, Wis. With the process, sprockets are said to be flame machined from steel plate in as little time as 5 minutes for a 12-inch sprocket. Other cutting times vary, depending upon the diameter, thickness, and characteristics of the metal.

Employing a pantograph principle, an oxyacetylene cutting head assembly, mounted on a track is moved forward and backward by mechanical linkage. Such movement is transmitted by following the contour of one of 20 basic cams, the design of which reflects standard and special sprockets and gears. This cutting head is led into the path of a revolving steel blank, whose turning rate is related to the speed of the cutting head.

A  $\frac{1}{2}$  h.p. motor with a variable speed control to ensure even burning moves all parts. As each tooth is cut, four gradual accelerations and decelerations in amplitudes of 4 to 1 are required and, when cutting as many as 14 teeth per minute, 56 speed variations are necessary. A speedometer is used to indicate the speed variations as they occur; this speed is controlled by means of an auxiliary cam which is so designed that the summations of circular and radial speed are constant.

Through combinations of cams, changes in the position of the pantograph legs, and substitution of various standard size driving gears, more than 5,000 types and sizes of sprockets and gears can be flame machined to a high degree of accuracy in pitch, concentricity, and contour. In addition, pinions, ratchets, and racks can also be flame machined. Only a few moments are said to be required in readying the equipment for cutting operations, and an easy change-over may be made for cutting different sizes of work. As each sprocket or gear is flame machined, the clean wearing surface of each tooth is automatically toughened in degrees determined by the characteristics of the metal itself—no further machining is necessary.

The present model of flame machining equipment is designed to handle sprockets and gears with diameters up to 4 feet, however, a model soon available will cut products over 5 feet in diameter, the manufacturer states. Sprockets to fit all classes and pitches of roller chains, detachable link chains, pintle chains,

combination chains, well-drilling chains, and so on, can be produced. Spur gears and ring gears of most types can be



Cogmatic Flame Machining Equipment in Use

matched to specifications. Sprockets up to 6-inch pitch, from 3 to 64 inches O.D. and with from 7 to 200 teeth, are said to

be accurately flame machined. Standard and special roller chain sprockets from  $\frac{1}{4}$  to  $2\frac{1}{2}$ -inch pitch can be made. Gear in pitch from 1 to 4 D.P., in size from 3 to 64 inches O.D., and with from 7 to 200 teeth can be cut.

The steel table on which the flame machining equipment is mounted is 33 inches high x 43 inches wide x 69 inches long. The pantograph and cam tracing parts are mounted in the rear, the cutting head being forward, as shown in the accompanying illustration.

### Whale Brand Screw Driver with "Nocombo" Handle

A screw driver with "Nocombo" plastic handle which is said to eliminate fire and personal safety hazards has been added to its line of Whale Brand products by the Forsberg Manufacturing Co., Bridgeport, Conn. No more flammable than ordinary hardwood, the plastic handle, it is claimed, will not soften when warm or shatter if dropped when cold. In addition, the handle is said to be an excellent electrical insulator and to be impervious to oil, grease, and water.

According to the manufacturer, the No-

## BALDOR BALL BEARING GRINDERS

**Rugged--for heavy-duty service  
Precision-built for precision work**

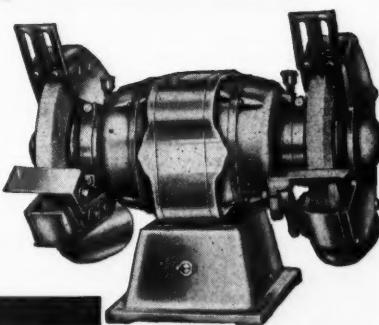
BALDOR Bench Grinder No. 101 —  $1\frac{1}{2}$  h.p., ball-bearing motor, 1725 rpm.— $10^{\prime \prime}$  Aloxite wheels, exhaust type guard \$128.00 and adjustable tool rests.....

IMMEDIATE SHIPMENT — ALL SIZES

**BALDOR ELECTRIC COMPANY**  
4380 Duncan Ave., St. Louis 10, Mo.

ASK FOR BULLETIN 321-C  
ON COMPLETE LINE

**A Complete Line**  
**— 6" to 12" wheels —**  
**BENCH and PEDESTAL TYPES**



combo handle is extruded in a design offering optimum gripping comfort and is combined with a special chrome vanadium alloy steel blade to produce a screw driver of unusual all-around strength. The screw driver can be obtained with a square-grooved or round shank blade



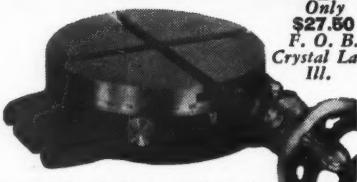
Whale Brand Screw Driver with "Necombo" Handle

which is shouldered at the handle and cannot be driven into or turned in the handle, it is stated.

### Carmet Grade CA-51 Alloy

The development of a sintered carbide alloy especially designed for high speed planer tools is announced by the Carbide Alloys Division, Allegheny Ludlum Steel Corp., Pittsburgh 22, Pa. Designated as Carmet Grade CA-51, the alloy can be supplied in blanks for planers utilizing

### SOMETHING NEW IN A LOW PRICED ROTARY LAYOUT TABLE



Only  
**\$27.50**  
F. O. B.  
Crystal Lake  
Ill.

Accurately Calibrated Through-  
out the 360° of Rotation

Here is the modern and accurate tool having features obtained only in much higher priced and larger tool room equipment. The outstanding features make it an indispensable table for tool rooms and model shops. Unique design and extensive tooling makes its low price possible.

Write for Free literature or Send Your Order  
TODAY!

THE ERWOOD COMPANY  
214 WOODSTOCK STREET  
CRYSTAL LAKE, ILLINOIS

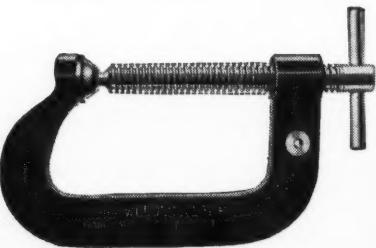
"clamped-in" or brazed-type blanks.

Carmet Grade CA-51 Alloy can also be furnished in blanks for heavy turning, boring, and facing tools, as well as for other tools requiring an unusually strong carbide.

### Hargrave No. 41 Light Service Welders' Clamp

Featuring a solid alloy screw that is claimed to permanently resist spatter, a light service welders' clamp designated as the Hargrave No. 41 is announced by The Cincinnati Tool Co., 4038 Montgomery Rd., Cincinnati 12, Ohio. In addition to the anti-spatter screw which is said to greatly reduce early replacement of the clamp necessitated by spatter formation, the tool features a forged steel heat-treated frame to add to its durability and length of service.

The Hargrave No. 41 Light Service



Hargrave No. 41 Light Service Welder's Clamp

Welders' Clamp is manufactured in 2, 4, 6, and 8-inch openings. The anti-spatter screw and forged steel frame are also available on the Hargrave No. 43 Heavy Service Welders' Clamp.

## COLLETS

for Swiss Type Screw Machines

Precision Made Collets Furnished for Your Automatics, such as Peterman, Gorton, Tornos, Gibbs, Wickman, Bechler, Hager, Ceco, Etc.

Also Tungsten Carbide Guide Bushings Made to Order for Swiss Automatics.

Prompt Delivery

**CHARLES W. FISHER**

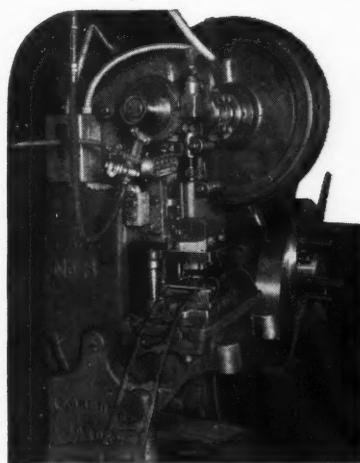
Phone Lancaster 3-3592  
ROHRERSTOWN • PENNSYLVANIA

## New Shop Literature

**Morse-Formspurag Clutch.** The Morse Chain Co., Dept. 22, 7601 Central Ave., Detroit 8, Mich., has available a 16-page two-color catalog devoted to the Morse-Formspurag Full Complement Over-Running Clutch, its construction, development, and working principle. All-purpose, indexing, and plain bearing types in a wide variety of horsepower and torque capacity ratings are covered in the catalog, which provides engineering diagrams of special designs at work with the Morse - Formspurag Clutch integrated within the designs. Copy of Catalog C11-48 free upon request.

**"Surface" Clean Hardening Furnaces.** Equipment for the clean hardening of steel is described in a two-color four-page bulletin issued by the Surface Combustion Corp., Toledo 1, Ohio. The bulletin depicts, with numerous illustrations, the use of "Surface" protective atmospheres for the clean hardening of various steel parts, employing the Standard Rated Balco or Char-Mo furnaces for batch processing and special furnaces for batch or continuous processing at very high production rates. Performance data in typical installations are presented, together with a chart showing the hardness gradients across sections of work heat treated by conventional processes compared to "Surface" protected work. Copy of Bulletin No. S.C.-138 free upon request.

**AAF Electro-PL Electronic Air Filter,** which consists basically of an electronic precipitator without an ionizing unit and contains a collector element of electrostatically charged Airmat paper, is fully illustrated and described in a 12-page bulletin published by the American Air Filter Co., Inc., 215 Central Ave., Louisville 8, Ky. In addition to complete information on the construction features and advantages of the filter, the bulletin contains suggested specifications, installation data, and other helpful material. Copy of Bulletin No. 257 free.



*Picture*

*OF AN  
L & J  
PRESS  
MAKING  
MONEY*

In continuous use 15 years, record sheet shows less than 50 cents per month for repairs. Paid for itself in a few months. Exceptional? No, it's commonplace with L & J Presses. Alert to the needs of industry for 38 years, L & J Presses today provide the ultimate in long service, short down time, low maintenance costs. Available 6 to 79 Tons capacity. Back geared and plain Flywheel type. Send for catalog.

**Dependable L & J Sales Engineers at Your Service**



**L & J PRESS CORP.**

SUCCESSORS TO LOUGHREY, JORDAN, TOOL & MACHINERY CO.

**826 Ren St.**

*Elkhart, Ind.*

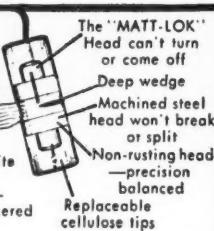
**Shapemaster Engraver**, a lathe which is designed to reduce the time-consuming art of hand engraving to the speed and repetitive accuracy of machine tool operation, is the subject of a six-page two-color illustrated bulletin published by The Monarch Machine Tool Co., Sidney, Ohio. The bulletin fully discusses the operation and application of the machine and presents its specifications, in addition to illustrations of typical parts produced on the unit. Copy of Bulletin No. 2502 free upon request.

## ADVANCE CLAMPS Cut Set-Up Time 75% on JIGBORERS

THE ONLY T-SLOT CLAMP  
For use on all machines with T-slots.  
Manufactured and sold by

**ADVANCE MACHINE WORKS**  
FORT WAYNE 7, INDIANA

'Only Turner  
PLASTIC HAMMERS  
give you All these features!



## A QUALITY HAMMER

Users report time and materials saved—with this Safety Hammer. Increase your profits by reducing your costs. Ask your tool jobber or write.

**MATTICKS  
MANUFACTURING CO.**

Hammer Specialists

4156 E. Pacific Way, Los Angeles 23, Calif.

"Check-All Gage, a fast universal production gage with unlimited applications, is illustrated and described in a four-page two-color circular prepared by Roper & Broderick, Inc., 1694 Main St., Springfield, Mass. Typical uses of the gage are illustrated. Copy free upon request.

**Thompson Grinders.** To facilitate the selection of all sizes of hydraulic surface grinders and other machines, The Thompson Grinder Company has prepared a 32-page catalog containing complete specification data and descriptions. The catalog is fully illustrated and indexed for quick reference. It also contains full facts on crush form grinding and actual case histories of Thompson Truforming. Copy of Catalog G-44B is available free to all persons interested in metalworking by writing to Dept. 27, The Thompson Grinder Co., Springfield, Ohio.

**Time Saver Table.** A catalog incorporating a unique "Time Saver Table" has been issued by the West Coast Aero Tool Co., 5401 Fountain Ave., Los Angeles 27, Calif. The table enables the user to determine quickly the number of parts which may be made from a given amount of material, thus speeding machine shop operations and eliminating waste. To use the table it is necessary only to know the length of the part and the width of the cut-off blade to be used. By adding these together and finding that dimension on the table, the number of parts which may be cut from one, ten, or a hundred feet is clearly indicated.

The table is available separately on request, either in notebook size or as a handy 22 x 16½-inch wall chart.

**GEARS**

Made in a modern Pacific Coast plant by engineers with over 20 years experience. Spur and Helical; Spline Shafts, Chain Sprockets, etc. Quotations furnished without obligation.

**GEAR ENGINEERING & MFG. CO.**  
2826 Norton Ave.  
Lynwood, Calif.



## "PRESTIGE ADVERTISER"

Here's a fellow with lots of patience. He's waiting for results from his advertising in "prestige magazines" . . . waiting for inquiries that aren't coming in. His sales are going to pot—but boy, is he building prestige!

### WHAT HE DOESN'T UNDERSTAND IS

that prestige without sales is non-negotiable at the bank. Actually, fast-acting MODERN MACHINE SHOP, which blankets the metal working industry, can give him a more profitable kind of "prestige"—the pres-

tige that results from profitable volume sales. Advertising in MODERN MACHINE SHOP gets tangible results. *RESULTS TELL THE STORY.* Gardner Publications, Inc., Cincinnati 2, Ohio.



## Spiral Flute COUNTERSINKS

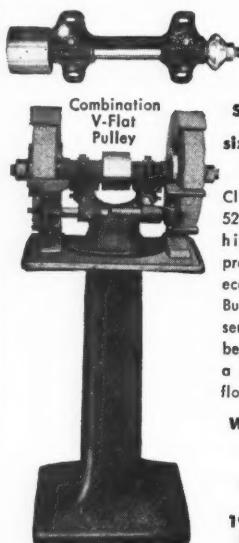


Aero Spiral flute HSS Co-sinks end chatter, cut clean and accurately. Stocked in 60, 82, 90, 100 degree included angle,  $\frac{1}{8}$ ,  $\frac{1}{4}$ ,  $\frac{1}{2}$  diameter, with  $\frac{1}{8}$ " shank and  $\frac{3}{16}$ ", and 1" dia. with  $\frac{1}{8}$ " shank. If not available from your Mill Supply dealer order direct.

**AERO TOOL COMPANY**  
6930 Avalon Bd., Los Angeles 3, Calif.

**T.A.C. Open-End Ratchet Wrench** for use on pipe, tube, conduit, cable, and rod fittings is pictured and described in an eight-page pocket-size two-color folder issued by the C. J. Hendry Co., 27 Main St., San Francisco, Calif. Typical uses of the wrench are illustrated and explained. Copy free upon request.

## CLIZBE SAW MANDRELS



and  
**ELECTRIC &  
BELT DRIVEN  
GRINDERS**  
**Saw Mandrels—**  
sizes  $\frac{1}{2}$ " to  $1\frac{1}{8}$ "  
saw hole.

Clizbe grinders, for 52 years built to highest standards, provide fast, easy, economical operation. Built for long, hard service in motor or belt driven models in a complete range of floor and bench types.

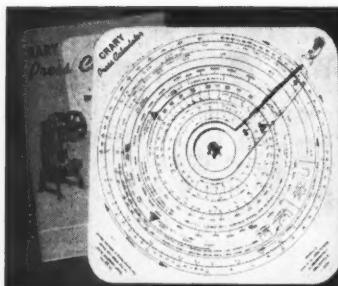
**Write for circular  
and prices.**

**CLIZBE BROS.  
MFG. CO.**  
1934 Harrison St.  
Plymouth, Ind.

**Ohmstede Model SC-42 Shape Cutting Machine** for cutting an unlimited variety of shapes is illustrated and described in an eight-page two-color catalog prepared by the Ohmstede Machine Works, 897 N. Main St., Beaumont, Tex. Specifications of the machine are included. Copy free upon request.

**"Allegheny Metal in Chemical Processing."** Publication of the fifth in its series of booklets on the role of stainless steel in various industries, "Allegheny Metal in Chemical Processing," is announced by the Allegheny Ludlum Steel Corporation. Up-to-the-minute facts and figures have been compiled on the use of stainless steels in chemical processing, acid manufacture, general processing, plastic making, and so on. Each chapter is fully illustrated. Charts listing physical, fabrication, and other data on the various recommended grades of stainless steel are included in the booklet, along with other information valuable to the engineer.

Designed for both technical individuals and laymen, the booklet describes the close parallel in the modern growth of stainless and chemical industries, showing how each has added to the other's advancement. The booklet, printed in color, may be obtained free upon request to the Allegheny Ludlum Steel Corp., 2020 Oliver Bldg., Pittsburgh 22, Pennsylvania.



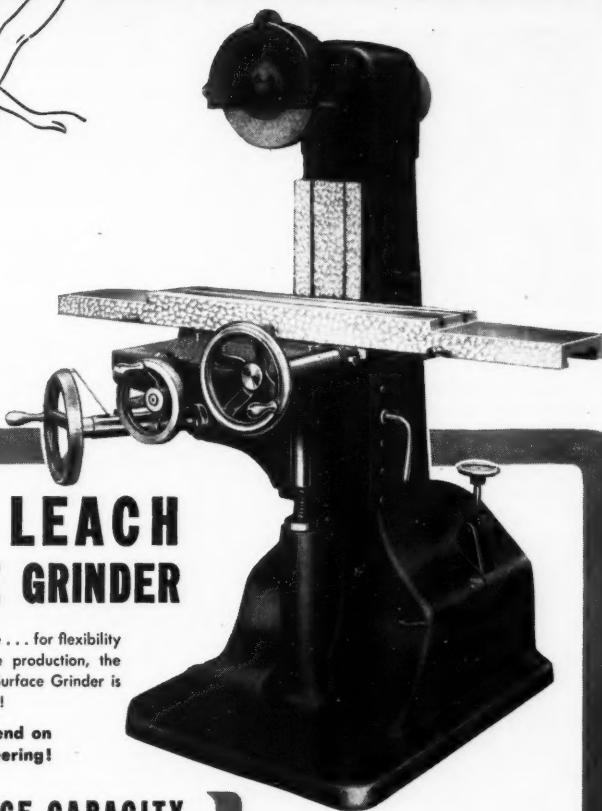
## POWER PRESS SELECTION SIMPLIFIED With CRARY Calculator

Designed to provide a quick and easy method of selecting mechanical and hydraulic presses for blanking, drawing and forming jobs. Gives correct speed for particular stroke and metal being worked. Developed by Len Crary, Staff Engineer, E. W. Bliss Co. Endorsed by National Tool and Die Mfg. Association, Pressed Metal Institute and adopted as standard by the press industry. Thousands in use. Calculator is  $9\frac{1}{2}$ " square. Made of durable Vinylite. Complete with 70 page handbook of press data and leatherette case. Write for illustrated folder.

**THE CALCULATOR CO., P. O. Box 4236, Phila. 44, Pa.**



*A Smooth Performer*



## NO. 11 LEACH SURFACE GRINDER

For smooth performance . . . for flexibility . . . for fast, accurate production, the rugged No. 11 Leach Surface Grinder is unequalled — anywhere!

You can depend on  
Leach engineering!

**EXTRA LARGE CAPACITY**

6" x 24" x 12"

HEIGHT 52" WEIGHT 850 lbs.

**2 SPINDLE SPEEDS**

2600 and 3500 R. P. M.

**\$750.00**

Complete with motor of standard  
current characteristics F.O.B. Factory

For further information write Dept. M

WORLD DISTRIBUTORS

**H. LEACH MACHINERY CO.**

387 CHARLES STREET

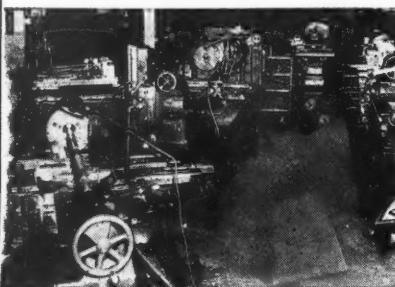
AGENTS IN ALL PRINCIPAL CITIES

PROVIDENCE 4, R. I.

**INTRODUCING ---**

# M.F.P.

**MACHINE SHOP FLOOR PATCH**



## **GREASE & OIL RESISTANT Shipped in Complete Unit!**

FLEXROCK M.F.P. has been carefully developed to meet and overcome the conditions existing in machine shops. Thorough tests have proved that it offers so much resistance to grease and oil disintegrators as to give absolutely satisfactory service on machine shop floors.

### **ADVANTAGES**

- (1) M.F.P. offers extremely high resistance to oil and grease, is shockproof and provides the maximum of foot-ease and light reflection.
- (2) M.F.P. is far more grease resistant than other patching materials. It requires only  $\frac{1}{8}$  inch "chip out" around edges.
- (3) In addition to its shatter-proof properties, M.F.P. has a surface hardness and smoothness reducing load-drag to the minimum.
- (4) M.F.P. can be applied over concrete or wood, and is of the same color as concrete.
- (5) It is shipped as a complete unit—there is no sand, stone, cement nor any other material to buy.
- (6) M.F.P. is extremely easy to apply and a good job can be done by anyone who will follow the simple directions.

*Write for New Folder*

**FLEXROCK CO. 3615 FILBERT STREET  
PHILADELPHIA 4, PA.**

**M.F.P.**  
**(MACHINE SHOP  
FLOOR PATCH)**



**"Plategrip"** Fasteners for heavy duty conveyor belts are fully illustrated and described in a four-page two-color circular issued by Armstrong-Bray Co., 5364-76 Northwest Highway, Chicago 30, Ill. Also shown and described are plates for patching and repairing conveyor belts. Copy free upon request.

**Collets and Carbide Bushings.** A line of imported headstock collets and adjustable carbide bushings for Swiss type screw machines is shown and tabulated in a six-page pocket-size folder prepared by the G and D Sales Co., Dillerville Rd., Lancaster, Pa. Prices of the various collets and bushings are included. Copy free upon request.

**Diamonett Model 47-B Lens Curve Generator**, which can be used for both precision and ophthalmic production, is illustrated and described as to construction and operating features in a four-page two-color folder issued by the Penn Optical & Instrument Co., Pasadena, Calif. Specifications of the unit are also listed. Copy free upon request.

**Farrel-Birmingham "Equipment News."** Published by the Farrel-Birmingham Co., Inc., Ansonia, Conn., this four-page two-color bulletin features an article on a new mill for rolling commutator bars. Data are also presented on an uncoiling mandrel used in re-rolling semi-finished strip and on vertical type coilers built to coil non-ferrous hot rod from an extrusion press. Copy of Bulletin No. 27 free upon request.

**Coated Abrasives.** A 24-page catalog containing list prices and general information on coated abrasives has been published by the Michigan Abrasive Co., 1111 Bellevue Ave., Detroit, Mich. Data are presented on aluminum oxide, garnet, and silicon carbide rolls, papers, belts, discs, and sheets, as well as on flint paper reams, emery cloth reams, lapping compounds, and special compounds. In addition, a grading chart showing comparable symbol numbers and screen sizes of grits is included.

Copy of Catalog No. 6 is available free upon request.

**IMMEDIATE DELIVERY**  
**HIGH SPEED STEEL, STRAIGHT SHANK**  
**TWIST DRILLS**  
*Extra Length*



**9" CUTTING FLUTES—12" LONG DRILLS**

SIZE INCHES	LENGTH OVERALL INCHES	LENGTH FLUTES INCHES	PRICE EACH NET	SIZE INCHES	LENGTH OVERALL INCHES	LENGTH FLUTES INCHES	PRICE EACH NET
1/8"	12	9	\$ 1.50	21/64"	12	9	\$ 2.25
9/64"	12	9	1.50	11/32"	12	9	2.25
5/32"	12	9	1.50	23/64"	12	9	2.50
11/64"	12	9	1.50	5/16"	12	9	2.50
3/16"	12	9	1.50	25/64"	12	9	2.75
13/64"	12	9	1.60	13/32"	12	9	2.75
7/32"	12	9	1.60	27/64"	12	9	3.00
15/64"	12	9	1.75	7/16"	12	9	3.00
1/4"	12	9	1.75	29/64"	12	9	3.25
17/64"	12	9	1.85	15/32"	12	9	3.25
9/32"	12	9	1.85	31/64"	12	9	3.25
19/64"	12	9	2.00	1/2"	12	9	3.25
5/16"	12	9	2.00				

**HIGH SPEED STEEL, TAPER SHANK**  
**TWIST DRILLS**

*Extra Length*

SIZE INCHES	LENGTH OVERALL INCHES	LENGTH FLUTES INCHES	PRICE EACH NET	SIZE INCHES	LENGTH OVERALL INCHES	LENGTH FLUTES INCHES	PRICE EACH NET
17/32"	15	12	\$ 6.50	27/32"	15	12	\$11.50
9/16"	15	12	7.00	5/8"	15	12	12.00
19/32"	15	12	7.50	29/32"	15	12	12.50
5/8"	15	12	8.00	15/16"	15	12	13.00
21/32"	15	12	8.00	31/32"	15	12	14.00
11/16"	15	12	8.25	1"	20	15	16.00
23/32"	15	12	8.50	1-1/16"	20	15	17.00
7/8"	15	12	8.50	1-1/8"	20	15	18.00
25/32"	15	12	9.50	1-3/16"	20	15	20.00
13/16"	15	12	11.00	1-1/4"	20	15	22.00

**VICTOR MACHINERY EXCHANGE, INC.**

251 Centre St.      Phone: CANal 6-5575      New York 13, N. Y.

# SERVICES DIRECTORY

GRINDING • STAMPINGS • TOOL and DIE WORK  
MACHINE WORK • CASTINGS • HEAT-TREATING  
FORGINGS • EMPLOYMENT • BUSINESS • ETC.

## PRECISION GROUND GEARS                    CAMS THREADS                SPLINES

Excellent facilities for grinding gears, cams, threads and splines on a contract basis.

SEND BLUEPRINTS FOR ESTIMATE

**HARTFORD SPECIAL  
MACHINERY COMPANY**  
300 HOMESTEAD AVE.  
Hartford, Conn.



## PRECISION GRINDING

A complete grinding service—Centerless, Internal, External, Blanchard, Plain Surface and Thread Grinding. Also a full production service including Tool and Die, Metal Stamping, Screw Machine and assembling departments. Send prints, sketch or samples for quotation.

**ACE MANUFACTURING CORPORATION**  
1235 E. Erie Avenue      Philadelphia 24, Pa.

## Dovetail, Flat and Circular Form Tools, Reamers, Counterbores

Prompt, Efficient Service. Attractive Prices

Send Your Inquiries to—

**ANDERSON, INC.**  
6603 W. Diversey Ave.      Chicago 35, Illinois

## PATTERNS

Wood and Metal — also Match Plates.  
For all kinds of castings—large or small.  
*Estimates on Request.*

**GENERAL PATTERN WORKS**  
2231 Buck St., North of Harrison Ave.  
Phone MAin 4751      Cincinnati, Ohio

## AUTOMATIC AND HAND SCREW MACHINE PRODUCTS

... up to 1½" diameter — any material —  
small or large quantities. Prompt service.

**IMSANDE SCREW PRODUCTS CO.**  
3517 Cardiff Ave., Oakley, Cincinnati, Ohio

## BAKELITE SILENT GEAR SERVICE

ALL SIZE BLANKS IN STOCK.  
Teeth Cut To Your Specifications.  
Prompt Delivery. Write for quotation.

**Greaves Machine Tool Co.**  
2009 Eastern Avenue      Cincinnati, Ohio

**CENTERLESS GRINDING** — Straight cylindrical, shoulder, profile and multiple diameters, any material analysis; also non-ferrous materials. Accurately ground taper pins and straight dowel pins. Brown & Sharpe and Swiss Automatic screw machine parts, heat treated and ground if necessary. Light bench type production drilling. Expanded facilities insure prompt and accurate service. Send blue prints or samples for estimates. The Porter Machine Co., 3139 Enyart Ave., Cincinnati 9, Ohio.

**WANTED:** On commission basis as sideline, experienced grinding wheel salesman, specializing in contacting large steel mills, to offer first quality high speed resin bonded wheels. Prepared to quote prices delivered domicile. Sample wheels available for testing purposes on performance basis. Applications will be held in strict confidence. Write Box 104, c/o Modern Machine Shop, 431 Main Street, Cincinnati 2, Ohio.

# DIE CUSHIONS

for all press requirements.

Ask our engineers.

DAYTON ROGERS  
Manufacturing Company

Minneapolis 7, Minn.



Due to expansion we now have  
open capacity in Zinc Alloy  
die castings.

**Univex**  
DIE CAST AND ENGINEERING COMPANY  
7001 Chase Road Dearborn, Mich.

"Vita-Lux" Enamel, a durable, fast-drying, washable, white enamel for all industrial walls and ceilings, is explained as to advantages, applications, selection, and so on, in a six-page three-color folder issued by the Vita-Var Corp., Newark, N. J. Copy free upon request.

**Elgin Sapphire Products.** The Sapphire Products Division, Elgin National Watch Co., Aurora, Ill., has prepared a two-color four-page circular which provides descriptions and prices of the company's sapphire plug gages, ring gages, and micrometers. The circular also describes the new "Tipt-Type" Sapphire Gage—an instrument with approximately  $\frac{1}{4}$ -inch sapphire tip metallically bonded to the leading end of the steel member. Copy free upon request.

The Very Best  
Facilities For . . .

# STAMPINGS

IN SMALL LOTS

DAYTON ROGERS  
Manufacturing Company

Minneapolis 7, Minn.

GRIND THE

*Eastern Centerless  
Way*

Our new plant with  
increased facilities  
assures

## PROMPT SERVICE

Eastern Centerless Grinding Co.  
470 Tolland Street East Hartford 8, Conn.

Hoffman Cartridge Filter for lubricating, industrial, or fuel oils requiring high or full flow rates is covered as to applications, operation, construction, advantages, and specifications in a four-page two color illustrated folder released by the U. S. Hoffman Machinery Corp., Filtration Division, 219 Lamson St., Syracuse 6, N. Y. Copy free upon request.

**Invincible Flux Recovery Equipment.** A six-page two-color folder illustrating and describing flux recovery equipment for submerged arc welding has been released by the Invincible Vacuum Cleaner Mfg. Co., Dover, Ohio. The folder fully covers the advantages of such equipment, basic features of design, models available, and typical installations. Copy free.

# WHERE TO GET IT



*Numbers shown are page numbers in this issue*

## A

- Abrasive Cloth, Paper, Discs, Belts, Stones, Etc.**, 132, 151, 187, 221, 279, 329
- Adapters**, 141
- Air-Operated Equipment** (Look for specific item)
- Angles**, 82
- Arbors**, 141

## B

- Balancing Machines**, 7, 298
- Balancing Ways**, 305, 340
- Bar Stock, Steel**, 57, 155
- Bases, Machine**, 138
- Bearings, Roller, Front Cover**
- Bearings, Sleeve**, 75, 131
- Bearings, Special**, 354
- Bearings, Thrust**, 295
- Bolt Fasteners**, 263
- Benches, Work**, 201, 347
- Bending Machines**, 277, 321, 335
- Bending Rolls**, 20
- Bins**, 201, 278
- Blades**, 98
- Blades, Cutting-Off**, 180, 252
- Blades, Insert**, 185
- Blocks, Clamping**, 148
- Blowers, Portable Electric**, 14
- Boring and Reaming Machines**, 147
- Boring and Turning Machines, Vertical**, 65
- Boring, Drilling and Milling Machines, Horizontal**, 3
- Boring, Drilling and Tapping Machines, Multiple**, 40, 257, 307
- Boring Heads**, 162, 309, 326
- Boring Machines**, 3
- Boring Mills, Horizontal**, 88
- Boxes, Shop**, 201, 327, 338
- Brakes, Press and Bending**, 80, 81, 105, 143, 287, 350
- Broaches**, 185, 313, 317, 331
- Buffers, Portable Electric**, 243, 388
- Bushings, Drill Jig**, 150, 220, 360, 362
- Bushings, Sleeve**, 122

## C

- Calculators**, 370
- Cams**, 323, 374
- Carbides**, 33, 64, 175, 181, 193, 223, 233, 244, 272, 306, 362, 311, 332
- Centering Machines, Automatic**, 277
- Centers, Lathe, Planer, Miller, Etc.**, 64, 141, 222, 229, 237, 309, 310, 360
- Checking and Holding Devices**, 319
- Chippers, Portable Pneumatic**, 118
- Chucking and Indexing Fixtures**, 332
- Chucking Machines, Automatic**, 93, 161
- Chucks, Collet**, 228, 282, 356
- Chucks, Diaphragm**, 127

- Chucks, Drill**, 84, 85, 141, 305, 351, 361
- Chucks, Lathe**, 70, 211
- Chucks, Magnetic**, 70, 231, 346
- Chucks, Power**, 61
- Chucks, Tap**, 84, 85, 141
- Chucks, Universal**, 70
- Clamps**, 98, 364, 368
- Clamps, Air**, 253
- Cleaners, Vacuum**, 156
- Clutches**, 114, 210, 274
- Collets**, 122, 356, 366
- Comparators**, 29
- Compressors, Air and Gas**, 50, 239
- Coolant Filters**, 60
- Coolants**, 63, 111, 113, 125, 203, 227, 341
- Coolant Separators**, 283
- Countershares**, 21, 137, 141, 165, 175, 252, 309, 328, 374
- Countersinks**, 21, 306, 370
- Couplings, Flexible**, 114
- Cut-Off Machines**, 270, 277
- Cutters, Bar, Rod, Etc., Hand**, 20, 312
- Cutter Sharpening Machines**, 8, 9, 138
- Cutters, Milling**, 94, 165, 252, 309, 323, 332
- Cutters, Sprue**, 20
- Cutters, Washer**, 325
- Cylinders, Hydraulic and Pneumatic**, 58, 219

## D

- Degreasers**, 268
- Demagnetizers**, 70, 331
- Desks**, 201
- Dial Feeds**, 96
- Diamonds and Diamond Tools**, 126, 322
- Diamond Wheels**, 322, 330, 348
- Die Casting Machines**, 157, 375
- Die Cushions, Pneumatic**, 375
- Die Feeds**, 96, 217
- Die Lifting and Handling Machines**, 45
- Die Making Machines**, 59, 276
- Dies**, 139, 161, 164, 181, 244, 323
- Dies, Lamination**, 96
- Dies Sets**, 13, 183, 301, 325
- Die Try-Cut Presses**, 379
- Dividing Heads**, 70, 320
- Dollies**, 316
- Dogs, Lathe, Grinder and Miller**, 98, 303
- Dressing Tools**, 148, 260, 331
- Drill Heads**, 47, 110, 293, 325, 384
- Drilling and Tapping Units**, 285, 325
- Drilling Attachments**, 273, 300
- Drilling Machines, Bench**, 123, 271, 290
- Drilling Machines, Multiple Spindle**, 20, 39, 325, 333
- Drilling Machines, Radial**, 15, 24, 109, 115
- Drilling Machines, Vertical**, 15, 27, 39, 109, 205
- Drills, Center, Core, Twist, Square, Etc.**, 21, 165, 248, 252, 309, 319, 323, 325, 373
- Drills, Hand**, 295
- Drills, Hardsteel**, 248
- Drill Sharpeners**, 309
- Drill Rods**, 297

**Drills, Portable Electric.** 14, 36, 37, 49, 119, 213, 243, 343, 361, 388  
**Drills, Portable Pneumatic.** 36, 37, 41, 49  
**Drives.** 175  
**Drives, Motor.** 107, 108, 247, 275  
**Dust Control Equipment.** 86, 262, 388

## E

**Engines, Diesel.** 50  
**Engraving Machines.** 154, 304  
**Envelopes,** 356  
**Etchers.** 311

## F

**Feeds, Drill Press.** 273  
**Files.** 32, 196, 221, 255  
**Files, Rotary.** 193, 311, 363  
**Filing Machines.** 122, 276, 355  
**Flame Hardening Apparatus.** 8, 9  
**Flexible Shaft Equipment.** 38, 243, 331  
**Forming Machines, Slip Roll.** 294  
**Furnaces, Heat-Treating.** 48, 235, 281

## G

**Gage Blocks.** 73  
**Gage Contacts, Diamond.** 126  
**Gages.** 52, 85, 127, 137, 153, 220, 323  
**Gear Cutting Machines.** 11  
**Gears and Gear Units.** 5, 263, 303, 320, 326, 356, 368, 374  
**Grinders.** 149  
**Grinders, Abrasive Band and Disc.** 284  
**Grinders, Air.** 50, 214, 303  
**Grinders, Bench.** 348, 361, 365  
**Grinders, Carbide Tool.** 89  
**Grinders, Centerless.** 8, 9  
**Grinders, Cutter and Tool.** 59, 67, 215, 307  
**Grinders, Disc.** 43  
**Grinders, Drill.** 59, 67, 240  
**Grinders, Face Mill.** 59  
**Grinders, Jig.** 45  
**Grinders, Pedestal.** 275, 299, 336, 370  
**Grinders, Plain.** 12  
**Grinders, Portable Electric.** 14, 50, 225, 243, 267, 388  
**Grinders, Profile.** 355  
**Grinders, Saw.** 112  
**Grinders, Surface.** 35, 46, 67, 78, 249, 371  
**Grinders, Swing Frame.** 312  
**Grinders, Tap.** 67  
**Grinders, Valve Seat.** 14  
**Grinding Fixtures and Attachments.** 10  
**Grinding Wheels.** 43, 145, 149, 194, 195, 221, 279

## H

**Hammers, Forge, Power-Driven.** 325  
**Hammers, Plastic.** 368  
**Hammers, Portable Pneumatic.** 118  
**Hammers, Rawhide.** 263  
**Hand Tools, Power** (Look for specific item)  
**Handles.** 97  
**Hardness Testing Devices.** 91, 117  
**Hinges.** 144, 315  
**Hobs.** 165  
**Holders, Knurl.** 22  
**Holders, Tap.** 313  
**Holders, Tool.** 98, 180, 318, 362

**Holders, Type.** 324  
**Honing Machines.** 16, 66  
**Hopper Units, Motorized.** 250  
**Hydraulic Equipment** (Look for specific item)

## I

**Indicators.** 259  
**Iron Working Machines.** 20, 342, 350

## J

**Jig Borers.** 10, 15, 45, 109  
**Jigs and Fixtures.** 127, 325, 331

## K

**Keys, Socket Screw.** 313  
**Keyway Cutting Machines.** 202, 323  
**Knives.** 221

## L

**Labels.** 319  
**Lapping Machines.** 8, 9, 16  
**Lathes, Automatic.** 7, 23, 31  
**Lathes, Bench.** 28, 74, 129, 271, 381  
**Lathes, Engine and Toolroom.** 34, 42, 51, 65, 68, 72, 79, 115, 311, 312, 359, Third Cover  
**Lathes, Speed.** 321  
**Lathes, Turret.** 7, 31, 42  
**Layout Materials.** 192, 314  
**Lead Products.** 305  
**Lighting Equipment.** 56, 304  
**Locating Tools, Optical.** 301, 318  
**Louver Covers.** 138  
**Lubricators.** 241

## M

**Magnifiers.** 334  
**Mandrels, Saw.** 370  
**Marking Machines.** 76, 309  
**Micrometers.** 153, 311, 334  
**Milling Machine Attachments.** 87, 344  
**Milling Machines, Hand.** 191  
**Milling Machines, Horizontal.** 28, 191  
**Milling Machines, Profile, Contour, Engraving.** Second Cover, 154  
**Milling Machines, Turret.** 162  
**Mills, End.** 137, 165, 185, 252, 289, 309, 323  
**Mills, Hollow.** 185  
**Molds, Lead Hammer.** 305  
**Motors.** 275, 280  
**Mounted Points and Wheels.** 221, 295

## N

**Nails.** 207  
**Needle Rollers.** 354  
**Nibblers.** 321, 354  
**Numbering Machines.** 204, 251  
**Nut Runners, Portable Electric.** 343  
**Nut Runners, Portable Pneumatic.** 50  
**Nut Setters, Portable Pneumatic.** 41

## O

**Oil Groovers.** 228

## P

**Pans, Tote.** 299  
**Pantographs.** 154

Parallels, 82  
Parts, Machine, Aircraft, Production, Etc., 50  
Patterns, 374  
Pick-Off Attachments, 96  
Pinion Cutting Machines, 138  
Pins, 302, 313, 322  
Planer-Millers, 88  
Planers, 88  
Plates, Drilling, 148  
Plates, Lapping, 82  
Plates, Surface, 82, 242  
Polishing Machines, 50, 243  
Polishing Wheels, 279, 295  
Presses, Arbor, 53, 171  
Presses, Die Try-Out, 379  
Presses, Hydraulic, 53, 80, 81, 171, 189, 219, 269, 286, 307  
Presses, Punch, 13, 30, 291, 299, 301, 367  
Presses, Sub, 138  
Profiling Machines, 277  
Pullers, 209  
Pumps, Coolant and Lubricant, 261, 265  
Pumps, Vacuum, 50  
Punches, 20, 97, 139, 338, 350  
Punch Press Feeds, 299

## R

Racks, 316  
Racks, Bar and Tube, 114, 201, 360  
Racks, Machine, 313  
Racks, Storage Bin, 201  
Racks, Tool, 300  
Reamers, 33, 64, 137, 165, 252, 258, 309, 310, 323, 374  
Reamers, Portable Electric, 343  
Reels, Stock, 327  
Rests, 141  
Resurfacing Materials, Floor, 372  
Riveting Machines, 184, 219, 302, 319, 352  
Rivets, 207  
Roll Feeders, 96  
Roll Forming Machines, 342  
Rolling Machines, Thread, 161

## S

Safety Equipment, Press, 130, 266  
Sanders, Portable Electric, 14, 50, 243  
Sanders, Portable Pneumatic, 50  
Sanding Machines, 271, 361  
Saw Blades, Band, 32, 54, 71, 182, 259, 295, 296  
Saw Blades, Circular, 32, 44, 159, 221, 223  
Saw Blades, Hack, 32, 54, 182, 221, 223, 259, 295, 296  
Saw Frames, Hack, 295, 296  
Saw Guides, Band, 56  
Sawing Machines, Band, 163, 271, 307  
Sawing Machines, Circular, 44, 271  
Sawing Machines, Hack, 26, 70, 92, 95, 173  
Saws, Portable Electric, 119, 213, 339  
Saws, Slitting, 252  
Saw Tires, Band, 56  
Saw Wheels, Band, 56  
Scalers, Portable Pneumatic, 118  
Scrapers, Hand and Power, 305, 306  
Screw Drivers, Hand, 295  
Screw Drivers, Portable Electric, 14, 50, 343  
Screw Drivers, Portable Pneumatic, 50  
Screw Driving Machines, Power, 250  
Screw Machines, Automatic, 40, 93  
Screws, Cap, Set, Socket and Machine, 97, 207, 308, 315, 323, 358, Fourth Cover  
Screws, Thumb, 303  
Screws, Transfer, 306, 316  
Screw Thread Inserts, 90

Services: Milling, Grinding, Lapping, Rebuilding, Repairing, Business, Etc., 18, 19, 288, 292, 374, 375  
Shapers, 17, 28, 68, 105  
Shearing Machines, 20, 80, 81, 105, 364  
Shears, Portable Electric, 119  
Shelving, 354  
Shims, 293, 315  
Skids, 316  
Slide Feeds, 96  
Sleeves, 160  
Slip Roll Formers, 80, 81  
Sockets, 98, 209  
Soldering Irons and Tips, 317  
Solenoids, 161  
Spacing Collars, Arbor, 141  
Special Machinery, 7, 24, 138, 325, 333  
Speed Reducers, 62  
Spindles, Drilling, 324  
Spindles, Grinding, 177  
Spot Facers, 20, 309, 326  
Spring Winders, 327  
Stampings, Pressed Metal, 208, 375  
Stamps, 160, 204, 206  
Steel, Die, 155, 221  
Steel Stock, Ground Flat, 32, 221, 259, 353  
Stools, 201  
Straightening Machines, 96, 171, 189, 305  
Superfinishing Machines, 7  
Surfacing Machines, Abrasive, 342  
Swaging Machines, 325  
Switches, 70, 161  
Styli, Diamond, 126

## T

Tables, Elevating, 55, 123, 290  
Tables, Rotary and Index, 200, 284, 299, 323, 358, 366  
Tapes, Measuring, 259  
Tap Extractors, 308  
Tappers, Portable Electric, 50, 243, 343  
Tappers, Portable Pneumatic, 50  
Tapping Attachments, 293, 314, 316, 357  
Tapping Machines, 31, 205, 290, 357  
Taps, 6, 21, 149, 153, 161, 164, 197, 245, 252, 323, 337, 345  
Threading Machines, 2, 4, 31, 138, 205  
Tool Bits, 98, 181, 223, 248, 252, 309, 331, 362  
Tool Blanks, 181, 332, 362  
Tools, Boring, 188, 309  
Tools, Boring, Diamond, 126  
Tools, Combined Boring and Facing Toolhead, 246  
Tools, Cutting Off, 309  
Tools, Deburring, 272  
Tools, Facing, Diamond, 126  
Tools, Form, 64, 137, 254, 331, 374  
Tools, Internal Threading, 188  
Tools, Recessing, 141  
Tools, Special Cutting, 64, 137, 248  
Transfer Punches, 338  
Trucks, Hand, 316  
Tubing, Stainless Steel, 25  
Turrets, Lathe, 349

## V

Valves, 58, 77, 133, 219, 261, 317  
Vibration Absorption Equipment, 169  
Vises, Bench and Machine, 22, 70, 82, 98, 114, 138, 199, 264, 320, 323, 328, 332

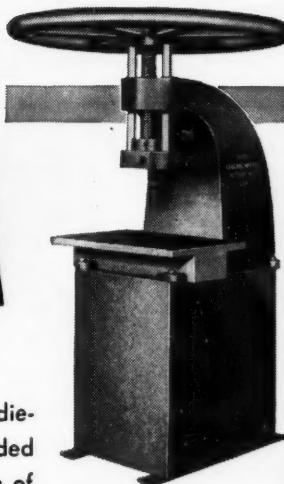
## W

Wrenches, 98, 209

**GENERAL NO. 7**

# DIEMAKER'S *Tryout Press*

**TRY OUT DIES  
IN THE DIE ROOM  
ELIMINATE TIE-UP OF  
PRODUCTION PRESS**



A dual purpose press especially for the die-maker. Get as many try out pieces as needed without leaving the die room. Combination of the heavy, large diameter wheel with high lead thread on the ram permits safe movement of punch in and out of die at 1.6" per revolution.

This combination delivers up to 60,000 pounds percussion pressure for test pieces after die is complete.

Eliminates tie-up of production presses—saves costly time of die-maker and production press—avoids risk of injury to diemaker or damage to the die. It will prove its worth—write for literature and quotation.

**GENERAL MANUFACTURING CO.**

6433 Farnsworth Ave. • Detroit 11, Mich.

3405

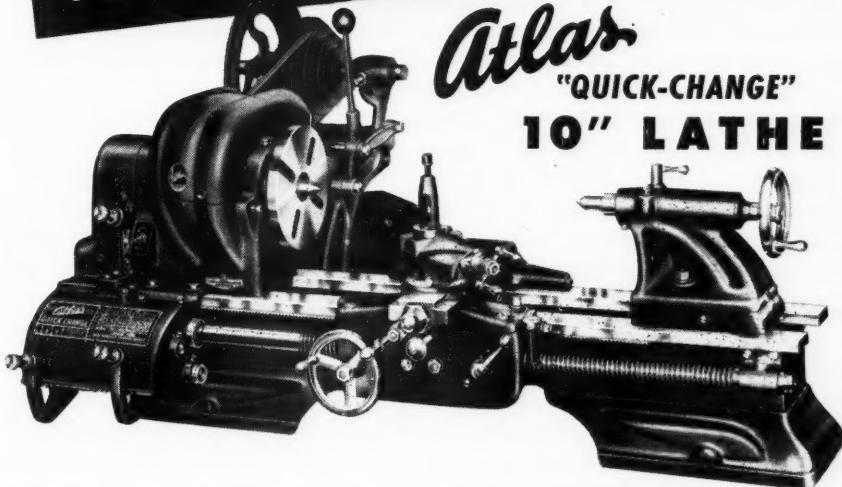


**Mall Portable Power Tools.** Designed to serve as a handy reference for tool users, their dealers, and their dealers' salesmen, a catalog illustrating and describing a complete line of portable power tools is now being published by the Mall Tool Co., 7740 S. Chicago Ave., Chicago 19, Ill. All illustrations included in the catalog are actual photographs of Mall portable power tools, and each picture is ac-

COMPANIED BY FULL CONSTRUCTION AND PERFORMANCE SPECIFICATIONS TO ENABLE THE READER TO INSTANTLY DETERMINE THE CAPACITY AND TYPES OF JOBS FOR WHICH EACH TOOL IS BEST SUITED. A NUMBER OF UNIQUE INTERCHANGEABLE ATTACHMENTS FOR ADAPTING THE TOOLS TO A WIDE VARIETY OF OPERATIONS ARE ALSO LISTED IN THE CATALOG, COPY OF WHICH IS AVAILABLE FREE BY REQUESTING FORM NO. 746.

# 16 SPEEDS

For Every Type of Machining



The greater speed range of an Atlas lathe adds to its value in your shop. From a low of 28 RPM it goes to 2072 RPM, with a standard 1725 RPM motor, giving you correct speeds for every lathe operation in metals, woods, and plastics.

Timken tapered roller bearings in the headstock (*exclusive with the Atlas among low-cost bench lathes*) maintain

spindle alignment, and minimize friction and wear on high-spindle-speed work.

Greater speed range and Timken bearings are but two of the many standard extra-value features incorporated in Atlas lathes to make them more useful in tool room, experimental, maintenance, and production work. Send for latest catalog with complete details.

**ATLAS PRESS CO.**

1046 N. Pitcher St., Kalamazoo, Mich.



MATCHED PRECISION TOOLS FOR  
WOODWORKING AND METALWORKING

---

## Over the Editor's Desk

---

### What Price Peace?

**A**S we go to press with this October, 1948 issue of MODERN MACHINE SHOP the people of America are tense, watching and listening for the latest news from Europe and wondering whether the next few hours will bring war or peace.

For nearly 175 years the American people have breathed the air of freedom. This freedom was not cheap; indeed, it was bought at a cost of thousands of lives and has been preserved for us at the cost of hundreds of thousands more. Twice within a generation has America had to fight countries on the other side of the earth to maintain freedom for its people, and the shadow of war is again darkening our land. If America is forced to fight again, this time the freedom and peace and security and happiness of practically all mankind will depend upon the outcome. This time the fight will determine whether our world is to live henceforth in an atmosphere of hate, and suspicion, and fear, and semi-slavery, or whether it is to go forward in the sunlight of peace and freedom.

But aside from the shadow of the war cloud, the American people are under strain. A general feeling seems to exist that our civilization has come to a fork in the road; that the world that we know is entering upon a new course—a course that will lead either upward into an age of unprecedented peace and prosperity, or that will lead downward into chaos, and perhaps bring our civilization to the brink of complete disaster. We watch the moves made by our government officials; we criticize; we suggest; we call for changes in the administration—and withal we feel utterly powerless in the presence of forces which we can neither understand nor control.

Seduced by a brilliant schemer and master salesman, during the dozen years just passed our legislators allowed the control of our government to slip from their hands until now, as Felix Morley tells us, "Administrative law, already dangerously developed, could with little change become government by outright decree. The one party system, already advocated by many who are not consciously fellow travelers, might take permanent root. The United States could easily become a single authoritarian, totalitarian state."

Realizing that we are beset by the forces of evil and selfishness both at home and abroad, we wonder if there is anything that could be done to stave off the impending calamity. There is—but it will necessitate a complete revolution in the thinking of millions of people. The history of civilization is the story of one nation after another

that has enjoyed great prosperity, then become selfish, avaricious and evil and has had to pay the penalty of a national disaster for its sins. That was the history of the Israelite nation, the Babylonians, the Greeks, the Roman Empire, the Spanish Empire, France and Germany. The Russian government will be permitted to carry on only until it has served its purpose, then it will be removed.

But what is happening to America? Why this strain on our national currency, with the threat of a possible financial collapse, and why this threat of what must be a completely disastrous war? We might begin the search for an answer by examining the trends in our national thinking in recent years.

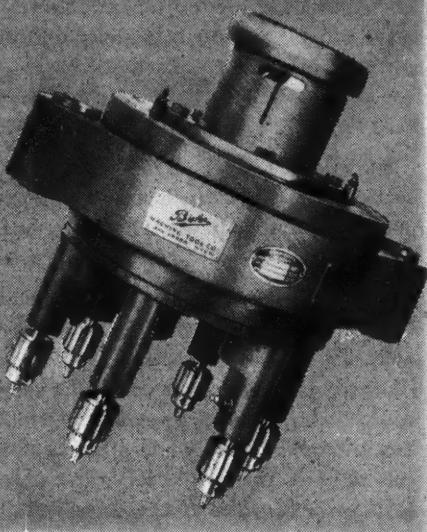
If we are honest with ourselves we will have to concede these truths: (1) Millions of Americans are more concerned with getting more of the world's goods for themselves, increasing their own incomes at the expense of their neighbors, and with doing as little work as possible in return than they are with the welfare of the nation as a whole. (2) Too many groups, by organizing to bring political pressure, are forcing higher incomes for themselves at the expense of their neighbors. Witness the unholy machinations of the "silver bloc" of legislators from the western mining states who have forced the price of silver up to a point out of all relation to its natural value. Witness the successful drive of the farm lobby to get a "floor" established under farm produce prices, which has resulted in American taxpayers paying millions of dollars for farm products which were destroyed because there was no market for them.

These are a few of many evils which, if not checked, will ultimately bring about national catastrophe. The fate of our nation depends in the long run upon our national character, and honesty is as important to our national character as freedom is to the nation. Unless our tendency toward selfishness is replaced by an honest effort to be as fair with our neighbors as we expect them to be with us, national freedom will not survive.

A handwritten signature in cursive script, appearing to read "Howard Campbell".

*Be Sure..*  
SPECIFY  
*Buhr*  
MULTIPLE SPINDLE  
DRILLING AND  
TAPPING HEADS  
FOR  
PRODUCTION

BUHR BUILDS ALL  
TYPES OF SPECIAL  
FIXED CENTER AND  
ADJUSTABLE  
MULTIPLE HEADS  
FOR HIGH PRODUC-  
TION UNDER SEVERE  
OPERATING  
CONDITIONS



Buhr Standard Adjustable Drilling and Tapping Heads are engineered and built to deliver high production at low unit cost. Fully adjustable, 2 to 8 spindles, for short or long runs. Rapid set up, models for all presses. Anti-friction bearing throughout. All gears are shaved, spline broached and induction hardened. Shafts and spindles splined.

Model 06-F-2 shown with No. 2 Jacobs Chucks also is available with spindles for Buhr Collets or with No. 1 Morse Taper. Drill capacity is  $\frac{5}{8}$ ", cast iron, minimum between center,  $1\frac{1}{2}$ ". Buhr steel - bushed guide - bar bosses are available for precision alignment with fixture.

CATALOGS AVAILABLE FOR  
YOU SHOP LIBRARY.

**BUHR MACHINE TOOL COMPANY**

845 GREEN STREET

ANN ARBOR, MICH.



## INDEX TO ADVERTISEMENTS

Abart Gear & Machine Co.	356	Buckeye Brass & Mfg. Co.	75
Abrasice Products, Inc.	187	Buffalo Forge Co.	20
Acme Industrial Co.	150	Buhr Machine Tool Co.	384
Acme Machine Tool Co.	42	Busch Co., J. C.	242
Acme Tool Co.	82, 200	Calculator Co.	370
Advance Machine Works	368	Carboly Co., Inc.	233
Aero Tool Co.	370	Carroll & Jamieson Machine Tool Co.	312
Aget-Detroit Co.	262	Carter Products Co., Inc.	56
Albertson & Co., Inc.	213	Center Scope Products Co.	318
Allied Products Corp.	139	Chandler Tool Co.	246
Almond Mfg. Co., T. R.	305	Chicago Pneumatic Tool Co.	50
Alofs Mfg. Co.	331	Chicago Rawhide Mfg. Co.	263
American Pipe Bending Machine Co., Inc.	321	Chicago Tool & Engr. Co.	138
American Steel Foundries	65	Chicago Wheel & Mfg. Co.	225
American Swiss File & Tool Co.	255	Climcool Div.,	
American Tool Works Co.	115	Cincinnati Milling Machine Co.	113
Anderson Bros. Mfg. Co.	305	Cincinnati Bickford Tool Co.	109
Anderson Oil Co.	227	Cincinnati Electrical Tool Co.	388
Armour Sandpaper Works, Div. of		Cincinnati Gear Co.	320
Armour & Co.	132	Cincinnati Lathe & Tool Co.	34
Armstrong-Blum Mfg. Co.	26	Cincinnati Milling Machine Co.,	
Armstrong Bros. Tool Co.	98	Flamatic Div.	8, 9
Arnold, Hoffman & Co., Inc.,		Cincinnati Planer Co.	88
Machine Tool Div.	125	Cincinnati Shaper Co.	105
Atlantic Gear Works	303	Circular Tool Co., Inc.	159
Atlantico Saw Mfg. Co.	71	Cities Service Oil Co.	63
Atlas Press Co.	381	Clark Instrument, Inc.	117
Auto Engraver Co., Inc.	154	Clausing Mfg. Co.	74
Auto Moulding & Mfg. Co.	315	Clemson Bros., Inc.	296
Avey Drilling Machine Co.	27	Cleveland Electric Motor Co.	280
Baldor Electric Co.	365	Clizbe Bros. Mfg. Co.	370
Barber-Colman Co.	33	Colonial Bushings, Inc.	360
Barnes Drill Co.	283	Comet Tool Co.	188
Bartelt Engr. Co.	311	Commander Mfg. Co.	293
Bath & Co., Inc., John.	153	Commercial Centerless Grinding Co.	302
Baumbach Mfg. Co., E. A.	301	Conant Tool & Engr. Co.	313
Bay, Inc.	338	Continental Machine Co.	270
Bay State Abrasive Products Co.	145	Cook, Inc., Lawrence H.	305
Bay State Tap & Die Co.	245	Cooley Electric Mfg. Corp.	235
Bear Mfg. Co., Industrial Div.	298	Coulter Machine Co., James.	4
Behr-Manning Corp.	151	Cratex Mfg. Co.	295
Bemis & Call Co.	87	Culliman Wheel Co.	62
Benchmaster Mfg. Co.	291	Curtis Pneumatic Mchry. Co.	239
Besly & Co., Charles H.	149	Cushman Chuck Co.	61
Beverly Shear Mfg. Co.	364	Dake Engine Co.	171
Bicknell-Thomas Co.	326	Dallett Co.	118
Black Drill Co.	248	Danly Machine Specialties, Inc.	13
Blanchard Machine Co.	35	Davis Development Co.	300
Bloomfield Tool Corp.	323	Davis Keyseater Co.	323
Boice-Crane, Inc.	271	Davis & Larrick Mfg. Co.	325
Boye & Emmes Machine Tool Co.	51	Dearborn, J. W.	332
Bremen Bearings, Inc.	354	Denison Engr. Co.	269
Brewster-Squires Co.	311	Detroit Power Screwdriver Co.	250
Bridgeport Machines, Inc.	162	Dickerman Mfg. Co., H. E.	217
Brighton Screw & Mfg. Co.	315	Disston & Son, Inc., Henry.	223
Brown Engr. Co.	114	Dorman Machine Tool Works.	314
Brown & Sharpe Mfg. Co.	73		

Doyle Vacuum Cleaner Co.	156	Hy-Pro Tool Co.	197	
Dreis & Krump Mfg. Co.	143	Ideal Industries, Inc.	237	
Dumore Co.	267	Independent Pneumatic Tool Co.	36, 37	
Dykem Co.	192	Industrial Products Suppliers	315	
East Shore Machine Products Co.	317	Ingersoll-Rand Co.	348	
Eclipse Counterbore Co.	175	Jacobs Mfg. Co.	83, 84	
Economy Engr. Co.	55	Johnson Bronze Co.	131	
Economy Machine Products Co.	358	Jones & Lamson Machine Co.	29	
Economy Tool & Machine Co.	220	Julius, Fred S.	316	
Electro-Mechano Co.	331	Kennametal, Inc.	332	
Elk Tools, Inc.	318	King Machine Tool Div., American Steel Foundries	65	
Enco Mfg. Co.	349	Knight Mchry. Co., W. B.	10	
Errington Mechanical Laboratory, Inc.	316	Knu-Vise, Inc.	263	
Erwood Co.	366	L & J Press Corp.	367	
Etco Tool Co.	351	L-W Chuck Co.	70	
Ex-Cell-O Corp.	215	Lafayette Tool & Supply Co.	323	
F & M Sales, Inc.	284	Laminated Shim Co., Inc.	293	
Falcon Tool Co.	137	Landis Machine Co.	2	
Farrel-Birmingham Co., Inc.	5	Landis Tool Co.	12	
Fellows Gear Shaper Co.	11	Langeller Mfg. Co.	325	
Felters Co., Inc.	169	Lapeer Mfg. Co.	253	
Firth-Sterling Steel & Carbide Corp.	181	Leach Mchry. Co., H.	371	
Fisher, Charles W.	366	LeBlond Machine Tool Co., R. K.	Third Cover	
Flexrock Co.	372	Lee Co., K. O.	361	
Flynn Mfg. Co.	326	LeMaire Tool & Mfg. Co.	307	
Foote-Burl. Co.	39	Lempco Products, Inc.	286	
Ford Mfg. Co., M. A.	311	Leslie Welding Co.	301	
Forsberg Mfg. Co.	295	Lewthwaite Machine Co., T. H.	312	
Forthman, Cliff J.	306	Lima Electric Motor Co.	275	
Fosdick Machine Tool Co.	15	Lincoln Park Mfg. Co.	331	
Frasse & Co., Inc., Peter A.	25	Linley Brothers Co.	184	
Fulfile Specialties Co., Inc.	261	Littleford Bros., Inc.	133	
Fulmer Co., C. Allen	16	Lodge & Shipley Co.	42	
G & D Sales Co.	122	Lucas & Son, Inc., J. L.	299	
Galland-Henning Mfg. Co.	58	Luers, J. Milton	180	
Gallmeyer & Livingston Co.	67	Luma Electric Equipment Co.	317	
Gammons-Hoaglund Co.	310	Lyon Metal Products Co.	201	
Gardner Machine Co.	43	M-B Products	303	
Gear Engr. & Mfg. Co.	368	Machine Products Corp.	319	
General Engr. & Mfg. Co.	17	Madison-Kipp Corp.	214	
General Mfg. Co.	379	Madison Mfg. Co.	147	
Gilmore & Co., F. F.	126	Majestic Drill Sharpener Co.	309	
Gisholt Machine Co.	7	Mall Tool Co.	38	
Gorton Machine Co., George.	Second Cover	Maplewood Mchry. Co.	342	
Govro-Nelson Co.	285	Marshall Steel	263	
Graham & Co., Inc., John H.	54	Martin Machine Works, J. E.	323	
Graham Mfg. Co., Inc.	22	Marvel Tool & Machine Co.	310	
Grant Mfg. & Machine Co.	302	Matticks Mfg. Co.	368	
Gray Machine Co.	354	McDonough Mfg. Co.	240	
Greaves Machine Tool Co.	326	Mead Specialties Co.	273	
Greenlee Brothers & Co.	40	Meinhardt Diamond Tool Co.	322	
Griffin Co., G. W.	64	Michigan Abrasive Co.	329	
Grob Brothers	122	Michigan Chrome & Chemical Co.	314	
Grobet File Co. of America	363	Michigan Drill Head Co.	110	
Gwilliam Co.	295	Milford Rivet & Machine Co.	352	
Hall Mfg. Co.	228	Miller-Knuth Mfg. Co.	173	
Hamilton Tool Co.	123, 290	Milwaukee Chaplet & Mfg. Co.	355	
Hammond Mchry. Builders, Inc.	18, 19	Modern Machine Shop	369	
Hanchett Magna-Lock Corp.	346	Moline Tool Co.	333	
Hannifin Corp.	219	Monarch Machine Tool Co.	72	
Hanson-Whitney Machine Co.	6	Montgomery & Co., Inc.	327	
Harvey Mfg. Corp.	276	Moore Special Tool Co., Inc.	45	
Hassall, Inc., John	207	Morris Machine Tool Co.	364	
Heald Machine Co.	3	Morton Machine Co.	44	
Heilmann Mfg. Co.	306	Motch & Merryweather Mchry. Co.	222	
Hell-Coil Corp.	90	Motor Tool Mfg. Co.	312	
Hendey Machine Co.	68	Mummert-Dixon Co.	National Acme Co.	161
Hevi-Duty Electric Co.	48	National Automatic Tool Co.	257	
High Speed Hammer Co., Inc.	319	National Machine Tool & Supply Co.	339	
Hilco Mfg. Co.	354	National Twist Drill & Tool Co.	165	
Hilliard Corp.	274	Nebel Machine Tool Co.	359	
Hjorth Lathe & Tool Co.	311	New Britain-Gridley Machine Div., New Britain Machine Co.	93	
Hoggson Pettis Mfg. Co.	206	New Method Steel Stamps, Inc.	324	
Holo-Krome Screw Corp.	Fourth Cover	Ningara Machine & Tool Works	80, 81	
Horberg Gage Co.	52			
Hossfeld Mfg. Co.	335			
Humm Safety Equipment Co., John	130			
Hydraulic Press Mfg. Co.	157			

Nichols Engr. Co., Modern Motor Drives Div.	108
Nichols-Morris Corp.	191
Nicholson & Co., W. H.	317
Nicholson File Co.	193, 196
Nielsen Tool & Die Co.	316
Noble & Westbrook Mfg. Co.	251
Norgren Co., Inc., C. A.	241
Norma-Hoffmann Bearings Corp.	First Cover
Norton Co.	194, 195
Numberall Stamp & Tool Co.	204
Nu-Tangs, Inc.	288
Oliver Instrument Co., Inc.	59
Oliver Mchry. Co.	307
O'Neill-Irwin Mfg. Co.	287
Onondaga Tool Corp.	258
Ottemiller Co., Wm. M.	308
Palmer-Shile Co.	77
Parker Co., Charles	199
Parker-Kalon Corp.	97
Penn Riv-It & Machine Co.	352
Phillips Mfg. Co.	268
Pines Engr. Co., Inc.	277
Pittsburgh Stamp Co., Inc.	160
Pittsburgh Tool Steel Wire Co.	297
Pope Mchry. Corp.	177
Preis Engraving Machine Co., H. P.	304
Prentiss Vise Div., Charles Parker Co.	328
Procuquier Safety Chuck Co.	357
Production Devices, Inc.	264
Production Machine Co.	342
Producto Machine Co.	183
Prosser & Son, Thomas.	89
Queen City Machine Tool Co.	299
Racine Tool & Machine Co.	95
Reading Machine Co.	202
Reiff & Nestor Co.	345
Reltoit Corp.	232
Republic Steel Corp., Union Drawn Div.	57
Rice Pump & Machine Co.	356
Rivett Lathe & Grinder, Inc.	129
Roberts Rubber Co., Weldon	279
Rockford Clutch Div., Borg-Warner Corp.	210
Ross Operating Valve Co.	133
Rotor Tool Co.	41
Ruleta Co., Inc.	327
Ruthman Mchry. Co.	265
S & S Machine Works.	144
Sales Service Machine Tool Co.	92
San Angelo Foundry & Mchry. Co.	294
Sanford Mfg. Co.	249
Savage Co., W. J.	321
Schauer Machine Co.	321
Scherr Co., Inc., George.	334
Schmidt, Inc., Geo. T.	76, 309
Schrillero Aero Tool Engr. Co.	21
Schulte Level, Inc.	107
Schultz & Anderson Co.	322
Screw Machine Specialty Co.	292
Scully-Jones & Co.	141
Seibert & Sons, Inc.	324
Seneca Falls Machine Co.	23
Senewa Co.	300
Sentry Co.	281
Service Machine Co.	69
Services Directory	374, 375
Severance Tool Industries, Inc.	272, 306
Sheldon Machine Co., Inc.	28
Simonds Abrasives Co.	221
Simonds Saw & Steel Co.	32
Skilaw, Inc.	49
Smit & Sons, Inc., J. K.	330
Snap-On Tools Corp.	209
Snow Mfg. Co.	205
South Bend Lathe Works	79, 303, 356, 360
Stackbin Corp.	278
Standard Electrical Tool Co.	336
Standard Gage Co., Inc.	35
Standard Pressed Steel Co.	325, 347
Standard Steel Specialty Co.	313
Stanley Electric Tools	119
Staples Tool Co.	64
Starrett Co., L. S.	259
Sterling Factory Equipment Co.	327
Sterling Mfg. Co.	301
Stevens, Inc., John B.	358
Stites Tool Co.	254
Strand Mfg. Co.	266
Stuart Oil Co., D. A.	341
Sturdimatic Tool Co.	229
Sun Oil Co.	160
Sundstrand Machine Tool Co.	340
Sunnen Products Co.	66
Super Tool Co.	185
Taft-Peirce Mfg. Co.	78
Tallman Tool & Machine Corp.	148
Tanneowitz Works	163
Thompson Grinder Co.	46
Thompson Mfg. Co.	331
Thompson & Son Co., Henry G.	182
Tomkins-Johnson Co.	94
Topflight Tape Co.	319
Torit Mfg. Co.	86
Transa, Inc.	339
Troyke Mfg. Co.	299, 320
Tungsten Electric Corp.	244
Turner Mchry. Corp.	247
Uebelhoer Bros., Inc.	319
United States Drill Head Co.	47
United States Electrical Tool Co.	243
U. S. Hoffman Mchry. Corp.	60
United States Steel Supply Co.	155
Universal Engr. Co.	282
Universal Transfer Punch, Inc.	338
V & O Press Co.	299
Van Products Co.	332
Veet Mfg. Co.	344
Veit & Young	320
Victor Mchry. Exchange, Inc.	373
Viking Tool Co.	362
Vimeo Mfg. Co.	304
Vlier Mfg. Co.	303
W. L. S. Stamping Co.	208
Wade Instrument Co.	356
Walker Co., Inc., O. S.	231
Walls Sales Corp.	284
Waltham Machine Works	138
Walton Co.	308
Wardwell Mfg. Co.	112
Warner & Swasey Co.	31
Watson-Stillman Co.	307
Watts Bros. Tool Works	325
Weldon Tool Co.	289
Wendt-Sonis Co.	309
West Coast Aero Tool Co.	362
Westcott Chuck Co.	211
White & Bagley Co.	203
Whitney Metal Tool Co.	350
Whyte Engr. Co.	96
Wicaco Machine Corp.	228
Wickman Corp.	348
Wiedemann Machine Co.	30
Willey's Carbide Tool Co.	260
Wilson, K. R.	53
Wilson Mechanical Instrument Co.	91
Winter Bros. Co.	164
Wolf & Co., Ltd., S.	14
Wood Co., R. D.	189
Wood & Spencer Co.	337
Woodworth Co., N. A.	127
Yohe Supply Co., Wm. S.	360
Ziegler Tool Co., W. M.	318



# NOT A CHANCE

MERCY,  
MASTER -  
MERCY!

THAT'S RIGHT! Dust and grit haven't a chance to cause trouble in your plant—when you have an AIR MASTER installed on your grinders and buffers.

The AIR MASTER instantly sucks up the millions of tiny particles of dust and grit that fly from the whirling wheels. The AIR MASTER frees the air of these deadly destroyers of health which workers ordinarily breathe into their lungs . . . keeps the tiny demons from getting into sensitive parts of expensive machinery.

Protect workers' health! Protect valuable equipment! Install the AIR MASTER! A size for every grinder and buffer. Fully self-contained . . . efficient, rugged, dependable!

WRITE TODAY FOR COMPLETE  
DETAILS

ELECTRIC DRILLS • GRINDERS  
BUFFERS • PORTABLE TOOLS  
AIR MASTER DUST COLLECTORS

*The Cincinnati*

**THE CINCINNATI ELECTRICAL TOOL CO.**

Division of THE R. K. LEBLOND MACHINE TOOL CO.

**2625 MADISON ROAD • • CINCINNATI 8, OHIO**

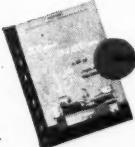


*Shift over 300 speeds  
with this lever on the new  
16" LeBlond Model RT Tool Room lathe*

Never before have so many important new advantages been built into one tool room lathe as on the new 16" LeBlond Model RT. With the variable voltage headstock you can shift over 100 speeds in each of three ranges without stopping the spindle. With the universal quick change box you select from the greatest range of threads, leads and feeds.

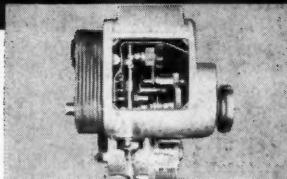
The 4-directional power rapid traverse moves carriage, cross slide, and tailstock electrically. One-piece apron with single lever length and cross feed control . . . thrust-lock tailstock with spindle travel dial . . . automatic lubrication throughout headstock, feed box, and apron . . . and many other advantages are included as standard.

There's a place in every modern plant for the new Model RT, the production tool room lathe. Maybe there ought to be one in yours?

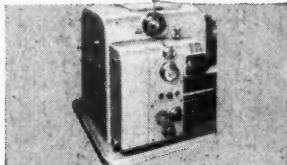


*send for*

your free copy of Bulletin RT-31.



COMBINATION GEAR-BELT DRIVE HEADSTOCK delivers over 300 spindle speeds all shifted by a single lever.



UNIVERSAL QUICK CHANGE BOX offers widest possible range of threads, leads and feeds.



ONE-PIECE DOUBLE WALL APRON with positive jaw feed clutch and automatic lubrication.

THE R. K. LEBLOND MACHINE TOOL CO., CINCINNATI 8, OHIO  
LARGEST MANUFACTURER OF A COMPLETE LINE OF LATHES

New York 6, N. Y., Singer Building, 149 Broadway, COurtland 7-6621  
Chicago 6, Ill., 20 N. Wacker Drive, STate 5561  
Philadelphia 40, Pa., Beury Bldg., 3701 N. Broad, SAgamore 2-5900  
Detroit 2, Michigan, New Center Building, TRinity 3-5561

**LeBLOND**

# HOLO-KROME

*Completely Cold Forged*

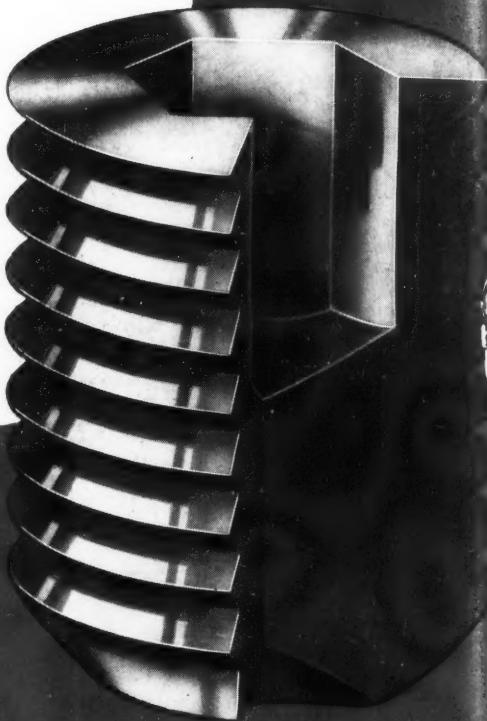
## SOCKET SET SCREWS

"BUILT-IN" FEATURES ASSURE  
PERFECT PERFORMANCE EVERY TIME!

1. **METHOD** — The exclusive Holo-Krome patented process of completely cold forging.
2. **SOCKETS** — Perfectly shaped, no taper, clean and centered.
3. **POINTS** — Concentric with body, maximum gripping and holding power.
4. **THREADS** — Accurate in form, uniformly clean, and guaranteed Class 3 Thread Fit.
5. **STEEL** — H-K special analysis heat-treated alloy.
6. **INSPECTION** — Each H-K Socket Screw is individually inspected before leaving the factory.

**RESULT — GUARANTEED  
UNFAILING PERFORMANCE.**

H-K Distributors are always ready to serve you from their warehouse stock.



# HK



THE HOLO-KROME SCREW CORP., HARTFORD 10, CONN.